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EYE AND EAR INFIRMARY

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MASSACHUSETTS EYE AND EAR INFIRMARY

annual report

about this annual report

There is more to this hospital than meets the eye (and ear)! In this annual report, we have featured some of the lesser-known services at the Massachusetts Eye and Ear Infirmary: facial nerve, thyroid, vision rehabilitation, hyperbaric medicine, balance, and voice and speech, to name a few. Look for the "Did You Know" features throughout the book. We hope you will enjoy learning more about all that MEEI has to offer.

Running a successful hospital requires a team effort and close collaboration between the Board of Directors, the Chiefs, the nurses, the medical staff and the administration. Pictured above are three members of the Massachusetts Eye and Ear Infirmary team: Joan W. Miller, M.D., chief of ophthalmology; Curt Smith, president; and Joseph B. Nadol, Jr., M.D., chief of otolaryngology.

On the cover: *Dr. Daniel Deschler, director of the Head and Neck Surgical Oncology Service and director of the Norman Knight Hyperbaric Medicine Center, exits the operating room. MEEI is a leading institution in the treatment of head and neck cancer and reconstructive surgery for the rehabilitation of the resultant functional defects. The specially trained staff of the service coordinates a comprehensive program, which includes surgery, medical management, radiation therapy, and social, dental and rehabilitation services, such as physiotherapy, speech therapy and nursing care. In addition, the service draws on the expertise of outside home health care, visiting nurse and hospice services.*

George Rabstejnek (left) and Curt Smith (right).

report of the PRESIDENT AND CHAIRMAN

In fiscal year 2005, the Massachusetts Eye and Ear Infirmary (MEEI) made great progress. We began a building program with major renovations on the seventh floor of the hospital as the first in a series of steps to improve patient care and to make room for increased medical staff so that everyone who needs their expertise will have access to it. We began redesigning the cafeteria area and filling in the courtyard space to create new physician academic offices that will free up space elsewhere, making it possible to build new, larger pediatric outpatient ophthalmology and otolaryngology suites.

MEEI also made significant strides in its mission to perform research that will expand and accelerate the search for cures. We built the Neil and Louise Tillotson Laboratory for the Cell Biology of the Inner Ear, which is a major investment in innovative research aimed at regenerating inner ear hair cells. We expanded the Vestibular Laboratory to accommodate equipment we will be purchasing with two NASA grants, equipment that will ultimately help people with balance disorders.

Our education mission continued to strengthen with new fellowships and a major new professorship, and our physicians and trainees received many awards. The James Wiggins Professorship of Otology and Laryngology for Teaching and Research in the Biology of the Ear is now endowed in perpetuity at Harvard Medical School with the income dedicated to supporting pioneering efforts at MEEI to restore hearing and prevent hearing loss. Thanks to the generosity of MEEI friend Norman Knight, we established the Norman Knight Leadership Development Award, which will be given to exceptional physicians who have just joined the medical staff and are becoming established as doctors and researchers.

We continued to improve operationally and ended the year with a small bottom-line profit. In addition, our receivables continued to be strong, and we were pleased to be in the top percentile of hospitals in this arena.

Our survey by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) went quite well and we passed with flying colors, thanks to the dedication and leadership of Carol A. Covell, R.N., M.S., Executive Vice President of Patient Services. We continue to be in full compliance with the JCAHO National Patient Safety Goals and are actively involved with other institutions and organizations to promote a safe environment.

Despite our successes, the financial challenges affecting the healthcare industry in general, and specialty hospitals in particular, continued to be enormous this year. To meet patient needs and keep our edge in the marketplace, MEEI constantly seeks new ideas to

2005 reynolds society dinner gala

The 19th Annual Reynolds Society Dinner and Achievement Awards was held on Friday, Oct. 28 at the Boston Park Plaza Hotel. Named for Dr. Edward Reynolds, MEEI co-founder, the Reynolds Society honors friends who contribute $2,500 or more to MEEI in a given fiscal year (Oct. 1 to Sept. 30). The evening included inspirational speakers and awardees, including Isaiah Jackson, music director of the Pro Arte Chamber Orchestra of Boston, and international musicians Ana Lucía and Patricia Elena Vlieg. Mike Wankum, chief meteorologist for "The Ten O'Clock News" on WLVI-TV (WB 56), was master of ceremonies. For more information about joining the Reynolds Society, contact Melissa Paul at 617-573-4168. The 2006 Reynolds Society Dinner will be held on Nov. 3 at the Boston Park Plaza Hotel. We hope to see you there.

Above: (left to right): 2005 Reynolds Society Achievement Award winners Ana Lucía Vlieg, Isaiah Jackson and Patricia Elena Vlieg

improve our already excellent patient care and build upon the services we offer. This summer we retained Navigant Consulting to assist us in identifying and evaluating various strategies to position MEEI competitively for the future. We are considering their recommendations and working to build upon the success and reputation that MEEI has achieved throughout its history.

MEDICAL STAFF EXCELLENCE

MEEI's success this year would not have been possible without the excellence of our medical staff and the leadership of: Salvatore Basta, M.D., Chief of Anesthesia; Hugh Curtin, M.D., Chief of Radiology; Joan W. Miller, M.D., Chief of Ophthalmology; Joseph B. Nadol, Jr., M.D., Chief of Otolaryngology; and Robert Hughes, M.D., Chief of the Medical Unit. Their vision, dedication and skillful management enable the MEEI to care so well for those who need us most.

We are pleased to note the following additions to our medical staff in 2005: Irmgard "Emmy" Behlau, M.D., as Director of Infectious Diseases; Sherif Ammar, M.D., a general otolaryngologist; Donald Keamy, Jr., M.D., a pediatric otolaryngologist; Douglas Rhee, M.D., a glaucoma specialist; and Jennifer Smullen, M.D., an otologist. In addition, there were the following promotions: George Papaliodis, M.D., was appointed Acting Director of the Ocular Immunology and Uveitis Service, following C. Stephen Foster's departure for private practice; Daniel Deschler, M.D., was appointed director of the Head and Neck Surgical Oncology Service following the retirement of Richard L. Fabian, M.D.; Joseph F. Rizzo, M.D., was named Director of the Neuro-Ophthalmology Service, taking the position formerly held by Simmons Lessell, M.D., who will continue to work in the service and to enhance our medical education curriculum.

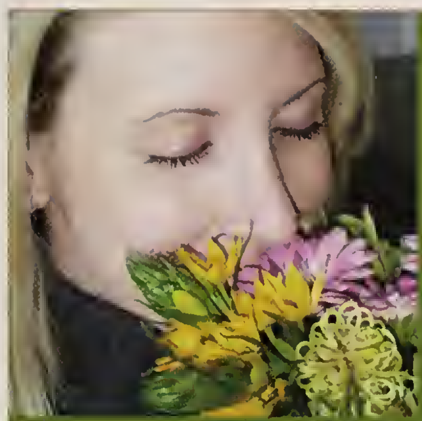
MEDICAL EDUCATION AND HONORS

Training the next generation of surgeons and scientists is an especially important part of our mission and demonstrates leadership in our specialties. This year, Matthew Gardiner, M.D., was named "Teacher of the Year" in ophthalmology, and Robert Frankenthaler, M.D., a community-based otolaryngologist, was honored with the William W. Montgomery Award for Excellence in Teaching. The otolaryngology Resident Teaching Award went to Michael Rho, M.D.

The MEEI celebrated the addition of one new Harvard Medical School Professor. John Rosowski, Ph.D., a hearing scientist in the Eaton-Peabody Laboratory and a leading middle-ear expert known worldwide, was named as Professor of Otology and Laryngology. Members of the medical staff, too numerous to name, won various awards and honors.

ENHANCING PATIENT CARE

The MEEI continued to respond to meet the needs of our patients and enhance their experience at the hospital. The major renovations, referred to in the opening paragraph of this report, will create space for the recruitment of up to twelve new physicians, thereby making it possible to schedule more appointments for more patients and reduce waiting times for these appointments. Work also began to improve the efficiency of our elevators, which will help move both patients and staff more smoothly. We had the pleasure of dedicating the 7th floor Family Waiting Room in honor of our generous friend and trustee, Phyllis Redstone. The Phyllis G. Redstone Family Waiting Room offers families comfortable surroundings in which to await the return of their loved ones, who are being cared for by our skilled surgeons and nurses.



DID YOU KNOW?

There are more than 200 possible reasons for losing the sense of smell or taste. Loss most commonly occurs after head injury, after an upper respiratory infection, or with chronic rhinosinusitis. MEEI specialists use a standardized test that measures the ability to smell and perform taste tests as necessary. Fiber-optic flexible and rigid nasal endoscopes are used to inspect the nasal cavity and olfactory region for polyps, obstruction, growth or infection, and radiologic imaging can also be used to pinpoint the problem for the best diagnosis and treatment.

GENEROUS FRIENDS

Philanthropy to MEEI was strong this year, with a final total of $11,084,000, which is the second highest giving total in the hospital's 181-year history and an 11% increase over last year. The generosity of our friends enabled us to raise more than $3 million for strategic priorities, including funding of professorships, fellowships, and a total perioperative system, for which we received a $500,000 challenge grant. The MEEI was the grateful beneficiary of three separate gifts of $1 million this year. Our 1824 Circle membership reached a record number of 45, up 136% since its inception four years ago, and unrestricted cash giving reached a new high. Annie Sullivan Society membership is up 200% over the past six years. As mentioned earlier in

DID YOU KNOW?

Unilateral or bilateral vocal cord paralysis is too often a byproduct of thyroid cancer surgery. When the nerve that powers the larynx is injured, patients can suffer temporary or permanent voice problems and may also have damage that impacts their swallowing or breathing. Physicians in the MEEI Thyroid and Parathyroid Surgical Service use an innovative nerve monitoring technology to help identify and preserve this important nerve during thyroid and parathyroid surgery. Such monitoring may decrease the rate of vocal cord nerve injury, and may reduce the incidence of voice and swallowing problems after thyroid surgery.

this report, we dedicated the Tillotson Laboratory, announced the Wiggins Professorship, and dedicated the Phyllis G. Redstone Family Waiting Room. And we enjoyed record attendance at both of our signature events: the Reynolds Society Dinner and the Founders' Day Luncheon.

Highlights of fiscal year 2005 include the following major gifts, planned gifts, grants and bequests.

- Gifts totaling $1,165,000 from Axel Eliasen for an endowed professorship to support Dr. Saumil Merchant;
- A $1 million life-income gift from Trustee Phyllis Redstone to support the research of Dr. Miller (age-related macular degeneration), Dr. Steven Rauch (balance and hearing), and Dr. Roland Eavey (pediatric hearing);
- A $1 million gift from the late Edward F. Knight and Marion Knight to support research in age-related macular degeneration;
- An unrestricted bequest of $850,000 from the Estate of Gullan Wellman-Albert;
- An anonymous $500,000 challenge grant for a total perioperative system, which must be matched with four additional $500,000 pledges;
- A $500,000 pledge from Michael and Betsy Dingman for a head and neck fellow;
- Gifts totaling more than $400,000 from Trustee Norman Knight for Leadership Development Awards and for the Norman Knight Partnership Fund;
- More than $375,000 from the Dr. Ralph & Marian Falk Medical Research Trust to support hair-cell hearing research;
- Grants of $330,000 from the Massachusetts Lions Eye Research Fund and the Lions Clubs International Foundation to support eye research and to buy equipment for the new pediatric ophthalmology suite;
- A bequest of $175,000 from the Estate of Gretchen Stone Cook to support eye research; and
- A $150,000 grant from the McKnight Endowment for Neuroscience to support hearing research.

We are delighted by the generosity of more and more MEEI friends, which is so important to funding our mission.

BUSINESS DEVELOPMENT

Royalties from licensing intellectual property developed at the MEEI continues to grow significantly with gross revenues exceeding $1.6 million in fiscal year 2005. This figure represents a more than 8-fold increase from fiscal 2000. Three new patents were allowed and will

Chrys Peralta, OTR/L
Occupational Therapist

Occupational Therapist Chrys Peralta assists Jose Gonzales with a special video system. MEEI's comprehensive Low Vision/Vision Rehabilitation Center helps people with vision loss remain independent by teaching them how to use their remaining vision to its fullest. Second Look: Sight Enhancing Equipment and Services is the first program of its kind to offer introduction to and training in the use of the wide variety of new technology products for low vision and legally blind patients in a hospital-based Vision Rehabilitation Center.

issue shortly. Early in the year, the formal responsibility for many of the administrative activities supporting intellectual property protection were transferred from Research Administration into Business Development, and a number of improvements related to the infrastructure and consolidated operations supporting technology are underway. This year we congratulated the winners of the annual MIT $50K Entrepreneurial Competition, Team Balico, which presented a vibrotactile balance aid (a wearable balance vest) based on technology developed by members of the MEEI Vestibular Lab, directed by Conrad Wall, Ph.D., and colleagues at the Draper Laboratory. In addition, the Massachusetts Technology Transfer Center awarded one of its first technology investigation awards of $25,000 to Dr. Wall for the wearable vestibular vest, which was described in an Associated Press story that ran in various news outlets, including *USA Today*.

DID YOU KNOW?

Two treatments developed in part by MEEI clinician scientists offer new hope for patients with age-related macular degeneration (AMD). This year Macugen™ was approved for the wet form of AMD, and the positive results of clinical trials using Lucentis™ were released. Building on research done in MEEI's Retina Research Institute, these drugs represent the next generation of AMD treatment.

INTERNATIONAL PROGRAM

This year, foreign patients from 83 countries were treated at the MEEI. More than 50% of the foreign patients traveled from Europe and the Middle East. In addition to celebrities and royal families that seek routine and advanced care at the MEEI, we were able to treat destitute patients, including a 5-year-old girl from China who had a large tumor removed from her eye/cheek; a baby girl from Ecuador who was treated for eye cancer; and a 52-year-old gentleman from Nigeria who had his vision restored, due to the efforts of the International Office staff and the generous support from individual donors, such as Ray Tye of the Ray Tye Medical Aid Foundation.

MARKETING

The Marketing Department initiated a market research study designed to gather information on the perception and image of the MEEI among current patients. The collected data will be used to better differentiate and market the MEEI brand and all of its services to both current and potential patients. Marketing also helped to update specific messages for the MEEI services with expanded radio coverage on WODS, WBCN and WBZ, and created fiscal year 2006 TV spots for WGBH (Channel 2). Trustee Roberta Siegel was most instrumental in the facilitating of air time for multiple public-service announcements on Charles River Broadcasting's five New England stations – WCRB, WFCC, WKPE, WCRI and WCNX.

COMMUNITY BENEFITS

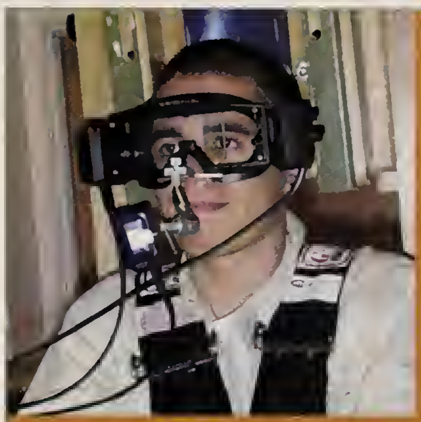
The MEEI and its physicians continued their commitment to providing service to the community through a variety of projects, including screenings, lectures and participation in health fairs. The hospital's Vision and

Hearing Care Program cared for the increasing numbers of children at the Neighborhood House Charter School in Dorchester, Mass. We have watched this school and its children grow during our multi-year relationship in which we have annually provided vision and hearing screening tests and any needed follow-up care to the children, regardless of ability to pay. In addition to the screenings at our "adopted school," we also provided a "good neighbor" vision screening, in collaboration with Boston City Council Member Michael Ross, at the Amy Lowell Apartments in Boston. The Audiology Department's fifth annual "Have You Heard" seminar, organized by Sharon Kujawa, Ph.D., was a resounding success. And finally, many physicians worked behind the scenes to provide free care, some of which helped children from all over the world as well as the victims of Hurricane Katrina.

FINANCIAL NEWS

Fiscal year 2005 was a challenging year financially for MEEI. Due to a change in Medicare payment rules, revenue for certain ambulatory services dropped significantly and adversely affected patient revenue. In addition, some of our plans for growth in patient volume did not work out as we had hoped. However, our management team, as always, developed the plans necessary to substantially offset the loss of revenue caused by these factors. Expense budgets were revised and ideas to generate additional revenue were brought forward. Slowly, but surely, the financial results improved and we posted a small, but very hard won, surplus for the fiscal year.

The new fiscal year is already bringing new challenges. Although we started the year with a balanced budget, it has become exceedingly clear that the Infirmary must generate a reasonable surplus in order to be able to fully support the organization's mission and its capital needs. One of our goals for fiscal year 2006 is to improve our financial performance to a level beyond a simple breakeven bottom line. We are working diligently to achieve this, and with the advice of our outside consultants, we hope to develop new ideas to provide more services more efficiently and to meet the needs of more people.



DID YOU KNOW?

Millions of Americans have balance disorders and more than 40% of them experience dizziness severe enough to go to a doctor for care. MEEI is one of the world's leading institutions for vestibular research. Investigators are working collaboratively to understand how the vestibular system works and to discover solutions to the problems caused when the system malfunctions. MEEI is developing a Balance Center to offer coordinated, focused, full-service care to complement MEEI's current treatment and testing capabilities.

RESEARCH NEWS

The clinical and basic research environment at MEEI is robust, having a funding base of approximately $19.8 million. The research funding portfolio remained quite diversified and reflects the high caliber of creative and innovative scientific work being carried out by MEEI scientists and clinicians. The following are some of the notable Federal research grants received this year:

> The National Institutes of Health, National Eye Institute (NEI), awarded a five-year grant of more than $2.4 million to Janey Wiggs, M.D., Ph.D., for her research into the genetics of open-angle glaucoma.

> The NEI awarded a five-year grant of more than $2.3 million to Louis Pasquale, M.D., for his study of gene-environment interactions in glaucoma. The NEI awarded Jarema Malicki, Ph.D., a five-year grant of more than $1.7 million for his project on genetics and photoreceptor differentiation.

> Donald Eddington, Ph.D., received a five-year grant of more than $1.7 million from the NIH-NIDCD for his project to improve the performance of bilateral cochlear implants.

DID YOU KNOW?

Not only can you have your eyes examined at MEEI, you can also purchase eyeglasses or contact lenses here. MEEI offers a full-service Optical Shop that dispenses common and complex prescriptions in the latest styles. The Contact Lens Service can fill your contact lens needs. Both services are located on the first floor and provide one-stop shopping.

> The National Science Foundation awarded a two-year grant of more than $1.4 million to Joseph Rizzo M.D., and his colleagues for their project, "Development of a Technological Platform to Study the Neural Code for Vision."

> John Guinan, Ph.D., was awarded a three-year grant of nearly $700,000 from the NIH-NIDCD for his work on olivocochlear efferent systems and cochlear physiology.

Our researchers and postdoctoral fellows were generously supported by many foundations, including the Massachusetts Lions, Foundation Fighting Blindness, Knights Templar, Glaucoma Foundation, Research to Prevent Blindness and the Deafness Research Foundation. We are most grateful for their support.

INFORMATION SERVICES

The Infirmary continues to demonstrate a long-term commitment to utilizing technology that adds value and improves patient safety. Significant strides were made toward finalizing a contract with Partners Healthcare for the use of their Clinical Data Repository and Longitudinal Medical Record. We devoted a great deal of energy toward the strategic planning required to secure funding for the future replacement for our Clinical Labs and Perioperative applications. In preparation for the implementation of these new systems, we saw a significant investment in our existing technology foundation during 2005. We continued to expand the availability of our Picture Archiving and Communications Systems (PACS), with mobile PACS systems now available in a number of our operating rooms. We dramatically improved network security in compliance with the Health Insurance Portability and Accountability Act April 2005 deadline, adding electronic mail encryption to our infrastructure to insure the privacy and confidentiality of patient information. Our dedication to the implementation of technology and the improvement of patient safety continues to be a priority.

IN CONCLUSION

This year was a strong year for MEEI, which remained a leading hospital in its field. Despite intense pressures and challenges inherent in today's healthcare environment, the Infirmary continues to excel in all aspects of our clinical care, teaching and research, furthering our commitment to those in need of our many specialized services. One aspect of MEEI that continually generates pride is our excellent physician and research staff. Their expertise, enthusiasm and dedication make MEEI the obvious choice for patients who require new and unique treatment that we — and many times, only we — can provide. To serve these patients, we will expand our clinical facilities to accommodate more physicians to attend to the growing number of patients. By building new labs and recruiting more scientists, we will continue to perform research that will lead to better treatments and cures. Succeeding medical generations will inherit and enhance the knowledge passed on to them by our present staff. Thanks to all of you for your efforts toward our achievements.

F. Curtis Smith

F. Curtis Smith

President

George J. Rabstejnek

George J. Rabstejnek

Chairman

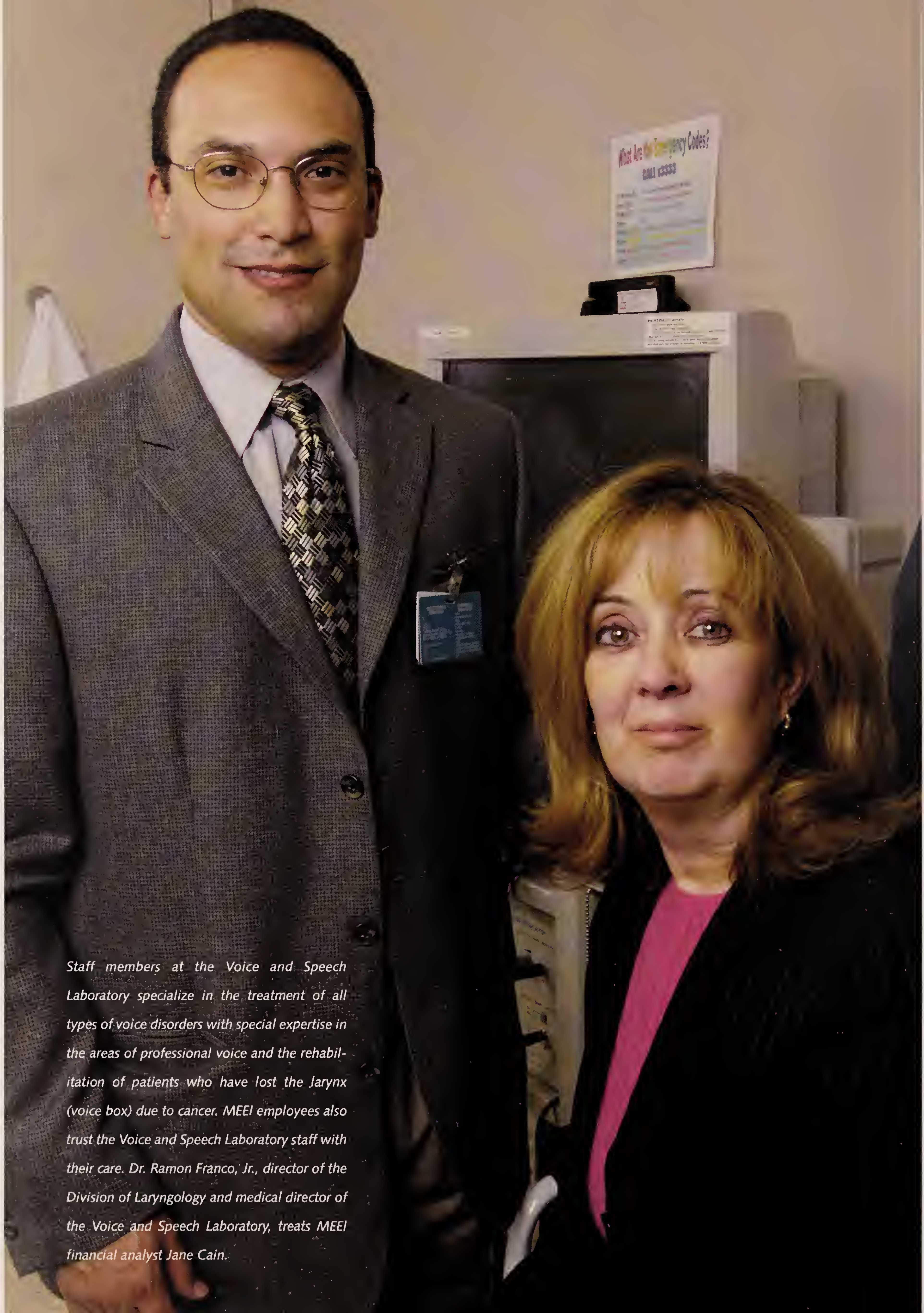
developing tomorrow's leaders

Norman Knight, great friend of MEEI, continued his generous support of the MEEI family this year with two new initiatives. The Norman Knight Leadership Development Award funds two very valuable awards, one for ophthalmology and one for otolaryngology, which will be given each year to junior physicians selected for their exceptional promise as medical leaders of the future. The first recipients of these awards are Drs. Derrick Lin and Ivana Kim. Mr. Knight also started the Norman Knight Partnership Fund, which will endow several small emergency grants to be given to MEEI full- or part-time employees in whose lives financial emergencies have arisen. Our gratitude to Mr. Knight for providing a helping hand.

Above: Drs. Derrick Lin and Ivana Kim

On a personal note, from Curt Smith:

I would like to express my special appreciation to George W. Rabstejnek, retiring Chairman of the Board of Directors, for his leadership, friendship and guidance throughout the years. George has been a trusted advisor and true champion of MEEI. We have accomplished great things in support of our mission during his tenure. I look forward to his continuing role as Chairman Emeritus.


What Are the Emergency Codes?
CALL x3333

Staff members at the Voice and Speech Laboratory specialize in the treatment of all types of voice disorders with special expertise in the areas of professional voice and the rehabilitation of patients who have lost the larynx (voice box) due to cancer. MEEI employees also trust the Voice and Speech Laboratory staff with their care. Dr. Ramon Franco, Jr., director of the Division of Laryngology and medical director of the Voice and Speech Laboratory, treats MEEI financial analyst Jane Cain.

report of the

CHIEF OF OPHTHALMOLOGY

The MEEI Department of Ophthalmology closed 2005 with an admirable list of accomplishments and great ambitions for the coming year. As Chair of Ophthalmology at Harvard Medical School, I have the opportunity to observe departments across the country, and I assure you that the MEEI represents the finest in service, ingenuity and scholarship.

CLINICAL CARE

Our faculty offers the fullest array of ophthalmologic services to patients. The numbers tell some of the story: over 28,000 patient encounters in the Comprehensive Ophthalmology Service (COS) and over 141,000 across the Department. The faculty, fellows and residents of MEEA also provided 3,695 surgeries in the Infirmary operating rooms and 1,500 procedures in the Laser Center.

Some important recruitment has been accomplished this year. Dr. Joseph Rizzo became Director of Neuro-Ophthalmology, succeeding Dr. Simmons Lessell. Board-certified in Ophthalmology and Neurology, Dr. Rizzo is a pioneer in the field of artificial intelligence and perception. In Uveitis/Immunology, Dr. C. Stephen Foster resigned as director to open a private practice. He remains a member of the academic Department and on staff at the Infirmary. We are pleased to have Dr. George Papaliodis serving as Acting Director of Uveitis/Immunology while we search for a permanent director. Dr. Papaliodis is board-certified in both Internal Medicine and Ophthalmology. The search for a new Glaucoma faculty member resulted in the recruitment of Dr. Douglas Rhee, who joined our practice this fall. A graduate of the University of Michigan, Dr. Rhee comes to us from Wills Eye Hospital, Philadelphia, where he specialized in complicated glaucoma surgery and pediatric glaucoma. We have several searches still underway, and look forward to successfully recruiting additional faculty to Comprehensive Ophthalmology, Pediatrics, Vision Rehabilitation, Neuro-Ophthalmology and Cornea.

We are also proud of the clinical and professional staff who bring their skills to patients around the world. Christine Ament, M.D., third-year resident, Thomas Merrill, Optical Services, and Jill Beyer, Contact Lens Service, participated in an eye surgical mission to El Salvador. Sarwat Salim, M.D., Comprehensive Ophthalmology Service & Glaucoma Service, joined a medical mission team in Guatemala. Aaron Fay, M.D., Oculoplastics Service, visited India as part of ORBIS International, an ophthalmic educational organization which focuses on upgrading local physicians' skills. Roberto Pineda, M.D., Cornea and Refractive Surgery Service, went to Ethiopia with ORBIS.

RESEARCH

A number of treatments developed in part in our research laboratories were approved for patient care this year. This year, Macugen™ joined the ophthalmic armamentarium, and we learned the exciting results of clinical trials using Lucentis™. Building on research done in MEEI's Retina Research Institute, co-directed by Evangelos Gragoudas, M.D., former MEEI scientist Anthony Adamis, M.D., and myself, these drugs represent the next generation of AMD treatment. Lucentis™ results have shown for the first time that drug treatment can improve vision in patients with AMD.

The Harvard Medical School's Residents in Ophthalmology Cataract Outcomes Study was developed to study and improve resident surgical training. Its first component is a compilation of resident surgical experiences, initiated by Sandra Cremers, M.D., and Bonnie An Henderson, M.D., of the Comprehensive Ophthalmology Service (COS). Its second component is a set of standardized criteria to evaluate surgical performance, developed by Dr. Cremers. In addition, Dr. Henderson is working with Dr. John Loewenstein, Residency Program Director, and other colleagues to create "Virtual Mentor," a software program that simulates cataract surgery, allowing residents to practice procedures, make surgical mistakes, and refine their skills "virtually."

Several faculty members received public acclaim for significant research contributions this year: Thaddeus Dryja, M.D., Eliot Berson, M.D., and Michael Sandberg, Ph.D., for work describing a previously unknown genetic mutation that interferes with retinal cell signaling; Cynthia Grosskreutz, M.D., Ph.D., for identifying a protein involved in cell death in glaucoma; Tiansen Li, Ph.D., for the role of an enzyme, LOXL1, in age-related loss of elasticity in tissues; and Johanna Seddon, M.D., for studies of the role of inflammatory biomarkers in patients with AMD.

Several of our clinician scientists received new federal research grants. Janey Wiggs, M.D., Ph.D., was awarded a 5-year grant from the National Eye Institute (NIH) for her genetics studies in glaucoma. Kathryn Colby, M.D., Ph.D., received a grant from the New England Corneal Transplant Research Fund. Louis Pasquale, M.D., Co-. Director of the Glaucoma Service, received 5-year funding from the NIH to study gene-environment interactions in glaucoma. Joseph Rizzo, M.D., was awarded a grant from the U.S. Defense Advanced Research Projects Agency to develop an interface between the retina and a custom-designed simulator chip, sometimes referred to as an "artificial retina."

DID YOU KNOW?

MEEI is home of the Commonwealth's first hyperbaric medicine service. The Norman Knight Hyperbaric Medicine Center's three chambers are available 24 hours a day for medical emergencies, carbon monoxide poisoning, smoke inhalation, gas embolisms, scuba diving injuries, and life-threatening infections. The Center is also used for wound healing in diabetics, those treated with radiation, crush injuries and thermal burns.

EDUCATION

The duty to teach future ophthalmologists and train tomorrow's scientists is an obligation we take seriously and find professionally satisfying. Eighty medical students selected our service for elective rotations, allowing us to give them a glimpse of the exciting future that is possible in ophthalmology. Eight new residents began in July, and our new Fellows have begun their clinical training and research.

An exciting development in training this past year was the first Intensive Cataract Surgical Training Course open to U.S. ophthalmology residents who have completed their second year of training. Held in early June, and directed by Bonnie An Henderson, M.D., and myself, the course was offered free to participants, thanks to private industry and departmental support. One hundred and fifty residents participated. As a result of its success, we will be offering this course again in 2006.

Our commitment to ongoing training for faculty and practitioners remains strong. We had an impressive roster of visiting lecturers, among them speakers from Harvard Medical School, University of Wisconsin, University of California at San Francisco, U.S. Food and Drug Administration, National Eye Institute of NIH, and Duke University Medical Center. For the 60th year, the department offered the Lancaster Course in Ophthalmology, under the direction of Lucy H. Y. Young, M.D., Ph.D. Kathryn Colby, M.D., Ph.D., continues the Professional Development Series she implemented last year to address important professional issues that are not directly scientific or clinical, such as promotion, compliance, intellectual property, mentoring, conflict of interest and authorship.

MEEI Ophthalmology faculty members were honored with a number of prestigious awards. Cornea specialist Claes Dohlman, M.D., received an Alcon Research Award and garnered additional honors as a World Congress Medal winner at the Cornea World Congress V in April. Marlene Durand, M.D., Infectious Disease consultant, received the 2005 HMS 50th Anniversary Scholars-in-Medicine MEEI fellowship. At the American Academy of Ophthalmology meeting in October, three MEEI researchers were honored: Thaddeus Dryja, M.D., Ophthalmic Pathology, was awarded the Zimmerman Medal and delivered the Zimmerman Lecture; Johanna M. Seddon, M.D., Sc.M., received the first Dr. Maurice F. Rabb, Jr., Award, and Deborah Langston, M.D., won the Thygeson Plaque and delivered the Thygeson Lecture. The Association for Research in Vision and Ophthalmology (ARVO)

DID YOU KNOW?

With advances in technology, the options for refractive vision correction have increased dramatically during the last few years. MEEI physicians and researchers have been at the forefront of many of these developments and have participated in many of the FDA-reviewed clinical trials. The Laser Vision Correction Center offers the latest technology and techniques available for a broad range of refractive procedures that correct vision for nearsightedness, farsightedness, astigmatism and presbyopia.

DID YOU KNOW?

In 2005 the International Office coordinated services for more than 800 patients from 83 countries. MEEI has assisted international patients of all ages and lifestyles — including dignitaries and those without means who need care only this hospital can provide — overcome challenges of vision impairment and disorders of the ear, nose, throat, head and neck.

announced that Evangelos Gragoudas, M.D., Director of the Retina Service, was selected as the 2006 winner of the Mildred Weisenfeld Award. Finally, I was named a recipient of the 2006 ARVO/Pfizer Ophthalmics Translational Research Award for work in elucidating the causes of and developing treatments for AMD.

Academic promotion is an important recognition of faculty contributions to the field of Ophthalmology. We are pleased to acknowledge individuals who have gained promotion in academic rank: **Kathryn Colby, M.D., Ph.D.**, Cornea Service, promoted to Assistant Professor; **Aaron Fay, M.D.**, Oculoplastics Service, promoted to Assistant Clinical Professor; **Bonnie An Henderson, M.D.**, Comprehensive Ophthalmology Service, promoted to Assistant Professor; **Jonathan Talamo, M.D.**, in community practice, promoted to Associate Clinical Professor; and **Janey Wiggs, M.D., Ph.D.**, Glaucoma Service, promoted to Associate Professor.

The year 2005 was a challenging year fiscally for our clinical practice and our research funding. Therefore, I am quite pleased that Ophthalmology has been able to achieve a modest surplus, invest in new faculty, and expand our teaching. The generosity of patients and other donors has allowed us to complete funding for the Osler Professorship and build toward the funding goals of three other endowed Chairs. Grants and awards for research continue at a high level, with nearly $3.2 million in funds from government, industrial, and foundation sources providing funding for ophthalmic research this year. We acknowledge with a special note of gratitude the continued funding from the charitable foundations which have supported us over the years in research on blinding eye disease: Massachusetts Lions, Lions Clubs International Foundation, Research to Prevent Blindness, Knights Templar Eye Foundation, The Glaucoma Foundations, Inc., and the Ruth and Milton Steinbach Fund, Inc.

It has been a busy and productive year in Ophthalmology. My report would not be complete without an expression of gratitude to the Board and Administration for their support, to our patients and friends, and to our untiring nurses, technicians and administrative staff, whose work underlies so much of our success. I look forward to a future of creativity and unsurpassed clinical and research advances from our department.

Joan W. Miller

Joan W. Miller, M.D.

Chief of Ophthalmology

MEEI pediatric patients receive the expertise of specialized nursing care in a family-centered and child-friendly environment. Annie Goulette, R.N., comforts 6-year-old Eluzer Brody.

report of the CHIEF OF OTOLARYNGOLOGY

The mission of the Department of Otolaryngology at the Massachusetts Eye and Ear Infirmary (MEEI) is to provide the best possible care for patients with disorders that affect the ear, nose, throat, head and neck regions; to conduct clinical and basic research in an effort to improve that care in the future; to participate in the education and training of future healthcare and research professionals; and to disseminate health-related information to the profession and to the general public.

PATIENT CARE, CLINICAL AND TRANSLATIONAL RESEARCH

General Otolaryngology Service

Under the direction of Gregory Randolph, M.D., the subspecialty areas of interest include disorders of smell and taste, the nose and paranasal sinuses, and sleep apnea. Eric Holbrook, M.D., has been appointed to the Research Grant Committee of the American Rhinologic Society. Salah Salman, M.D.'s, second book, "Atlas of Diagnostic Nasal Endoscopy," was published in 2004.

Thyroid and Parathyroid Surgery Service

This is the first full year of operation of the Thyroid and Parathyroid Surgery Service at MEEI. Dr. Randolph served as a faculty member in a number of national and international symposia in the area of thyroid and parathyroid disease and has founded The National Endocrine Surgery Study Group.

Head and Neck Surgical Oncology Service

Vicente Resto, M.D., was appointed as the first Dingman fellow in Head and Neck/Microvascular Reconstructive Surgery. Daniel Deschler, M.D., served as the keynote speaker for the annual meeting of the International Association of Laryngectomees. James Rocco, M.D., has begun a clinical research effort evaluating the use of novel anti-angiogenesis medications to treat head and neck neoplasia. Derrick Lin, M.D., the newest member of the Division, is evaluating the potential use of Cox-2 inhibitors in the management of head and neck tumors.

Laryngology Service and Voice and Speech Laboratory

Ramon Franco, Jr., M.D., was appointed as director of the Division of Laryngology, which offers comprehensive care for benign and malignant laryngeal lesions, airway reconstruction, and neurolaryngologic disorders. The Division plans a Harvard Search for a senior investigator to serve as the director of the Mosher Laryngology Research Laboratory.

In October, the Voice and Speech Laboratory had its first open house for voice teachers and students in the New England area.

Facial Plastic and Reconstructive Surgery Service

The Facial Nerve Clinic, under the direction of Tessa Hadlock, M.D., has increased the number of patient visits internationally. Dr. Hadlock is the recipient of a training grant from the NIH for research to improve surgical outcomes in facial nerve injuries. Mack Cheney, M.D., Director of this Service, was honored with the annual Humanitarian Award by the American Academy of Facial Plastic and Reconstructive Surgery in recognition of his plastic surgical missions in Latin America. Richard Gliklich, M.D., received funding for evaluation of a new minimally invasive procedure in facial plastic surgery.

Pediatric Otolaryngology Service

Under the direction of Roland Eavey, M.D., this Service provides unique subspecialty services to patients such as the Vascular Malformations Clinic, organized by Michael Cunningham, M.D., and the Pediatric Voice, Airway, and Swallowing Clinic, an interdepartmental effort with Pediatric Gastroenterology and Pulmonary Services at MGH, and directed by Chris Hartnick, M.D. The research efforts of the Division include study of subglottic stenosis funded by a K08 award to Leila Mankarious, M.D., and a tissue engineering effort to provide safer and more reliable methods for tracheal reconstruction organized by Dr. Hartnick. In addition to his responsibilities as Director of the residency training program, Dr. Cunningham is president-elect of the American Society of Pediatric Otolaryngology. Dr. Hartnick successfully launched a clinical fellowship in Pediatric Otolaryngology.

Otology, Neurotology, Audiology, Cochlear Implant Research Laboratory, and Vestibular Laboratory

Clinical members of the Otology/Neurotology Service have developed complementary subspecialty areas of interest. Thus, Saumil Merchant, M.D., in conjunction with John Rosowski, Ph.D., continues his basic and translational research in the mechanics of the middle ear. His research also includes pathology of the ear. Steven Rauch, M.D., has grant support to study the management of sudden hearing loss. I am studying the pathology of the inner ear in individuals who in life had undergone cochlear implantation. Michael McKenna, M.D., continues his work in the molecular biology of otosclerosis.

The Cochlear Implant Research Laboratory, under the direction of Donald Eddington, Ph.D., is investigating the potential benefits of bilateral cochlear implantation, particularly in the area of fusion and localization of sound.

The Audiology Department, under the direction of Sharon Kujawa, Ph.D., provides an outstanding comprehensive and diagnostic and rehabilitative service to patients of all ages at three clinical sites. In addition, the Audiology Department performs intraoperative nerve monitoring, both at MEEI and MGH, and performs newborn hearing screening at four area hospitals. Dr. Kujawa collaborates with Charles Liberman, Ph.D., Director of the Eaton-Peabody Laboratory (EPL), and with Bruce Tempel at the University of Washington in a study funded by NIDCD on the genetics of susceptibility to noise-induced hearing loss. Chris Halpin, Ph.D., in collaboration with Dr. Rauch, is a co-investigator on an NIH-funded multi-center clinical trial of oral versus

DID YOU KNOW?

Plastic surgery has been performed at MEEI since World War I. The Facial and Cosmetic Surgery Center now offers a variety of less-invasive cosmetic procedures that can be performed under local anesthesia in the office setting.

caring for the community

The MEEI and its physicians continued their commitment to providing service to the community through a variety of projects, including screenings, lectures and participation in health fairs. The hospital's Vision and Hearing Care Program cared for the increasing numbers of children at the Neighborhood House Charter School in Dorchester, Mass. In addition to the screenings at MEEI's "adopted school," staff also provided a vision screening, in collaboration with Boston City Council Member Michael Ross, at the Amy Lowell Apartments in Boston. The Audiology Department's fifth annual "Have You Heard" seminar, organized by Sharon Kujawa, Ph.D., was a resounding success. And finally, many physicians worked behind the scenes to provide free care, some of which helped children from all over the world, as well as the victims of Hurricane Katrina.

Above: Dr. Sandra Montezuma, first-year ophthalmology resident, screens a child for pediatric vision problems.

intratympanic steroids for sudden hearing loss. The Department's annual public forum "Have You Heard?" was sponsored late in 2005 and was well attended by members of the lay public.

New space has allowed the vestibular group to accept approximately $2.5 million of new research grants from NASA. Lionel Zupan, Ph.D., is the PI on one grant and Daniel Merfeld, Ph.D., on another. The laboratory also is involved in the development of implantable neural-vestibular prostheses.

BASIC RESEARCH

During the year there were several noteworthy accomplishments by members of our research faculty:

> Dr. Albert Edge described an in vitro system in which progenitors of neural cells form neural projections and connections with hair cells which will allow systematic study of the stem cell types and chemical conditions required to optimize the regrowth of cochlear nerve fibers.

> Dr. Jennifer Melcher demonstrated a strong correlation between the listener's perception and neuronal activity as demonstrated by functional MRI in an area of the auditory cortex, thus providing clues as to the mechanisms and anatomic locations of auditory perception.

> Drs. Sharon Kujawa and Charles Liberman demonstrated that noise damage to the inner ear early in life renders the ear more vulnerable to age-related deterioration.

> Drs. McKenna, Merchant, Adams and their co-workers identified that osteoprotegerin controls bone remodeling around the inner ear. It is possible that malfunctions in this molecular mechanism may underlie disease states of the inner ear such as otosclerosis.

- Haobing Wang, working with Dr. Merchant and other investigators in EPL, developed an interactive, virtual, three-dimensional model of the human temporal bone that holds promise for teaching and for research.

NEW GRANTS

- A 5-year grant from NIDCD to Drs. McKenna, Sewell and Kujawa for collaborative work with Draper Laboratories to design and develop an implantable drug-delivery microdevice for the inner ear.
- A 3-year grant from NIDCD to Dr. Albert Edge for stem cell transplantation as a mechanism for regeneration of the inner ear.
- A 5-year grant from NIDCD to Dr. Bertrand Delgutte to study responses of cells in the auditory central nervous system.
- A 5-year research grant from NIDCD to Dr. John Guinan to study the function of tiny mechanical motions within the hair cells of the inner ear.
- A 5-year research grant to Drs. Saumil Merchant and John Rosowski to study sound transmission in the normal and diseased middle ear to develop better methods of reconstruction.

On May 11, 2005, the Tillotson Laboratory of Cell Biology of the Inner Ear opened on the third floor of the Connecting Building. The important research work to be carried out here will be supported in part by the newly developed James Wiggins Professorship in Otology and Laryngology.

We are pleased to announce the recruitment of Ruth Anne Eatock, Ph.D., to the EPL. Currently a Professor at Baylor College of Medicine, her special interest is the biophysics of hair cells, both in hearing and vestibular end organs.

EDUCATIONAL MISSION

This year saw several successful courses and symposia: Nov. 19-20, 2004 – "Surgery of the Thyroid and Parathyroid Glands," directed by Dr. Randolph; April 29-30, 2005 – "Voice Disorders Update" directed by Dr. Franco; and June 24, 2005, Dr. Ernest Weymuller discussed "Outcomes Research in the Management of Cancer of the Head and Neck."

In conjunction with our colleagues at the Children's Hospital, Beth Israel Deaconess Medical Center, and Brigham and Women's Hospital, the Department continues sponsorship of its combined residency training and program in Otolaryngology Head and Neck Surgery. In fiscal year 2005, the Department hosted 18 research fellows and 25 visiting colleagues from 14 countries.

PROFESSIONAL STAFF

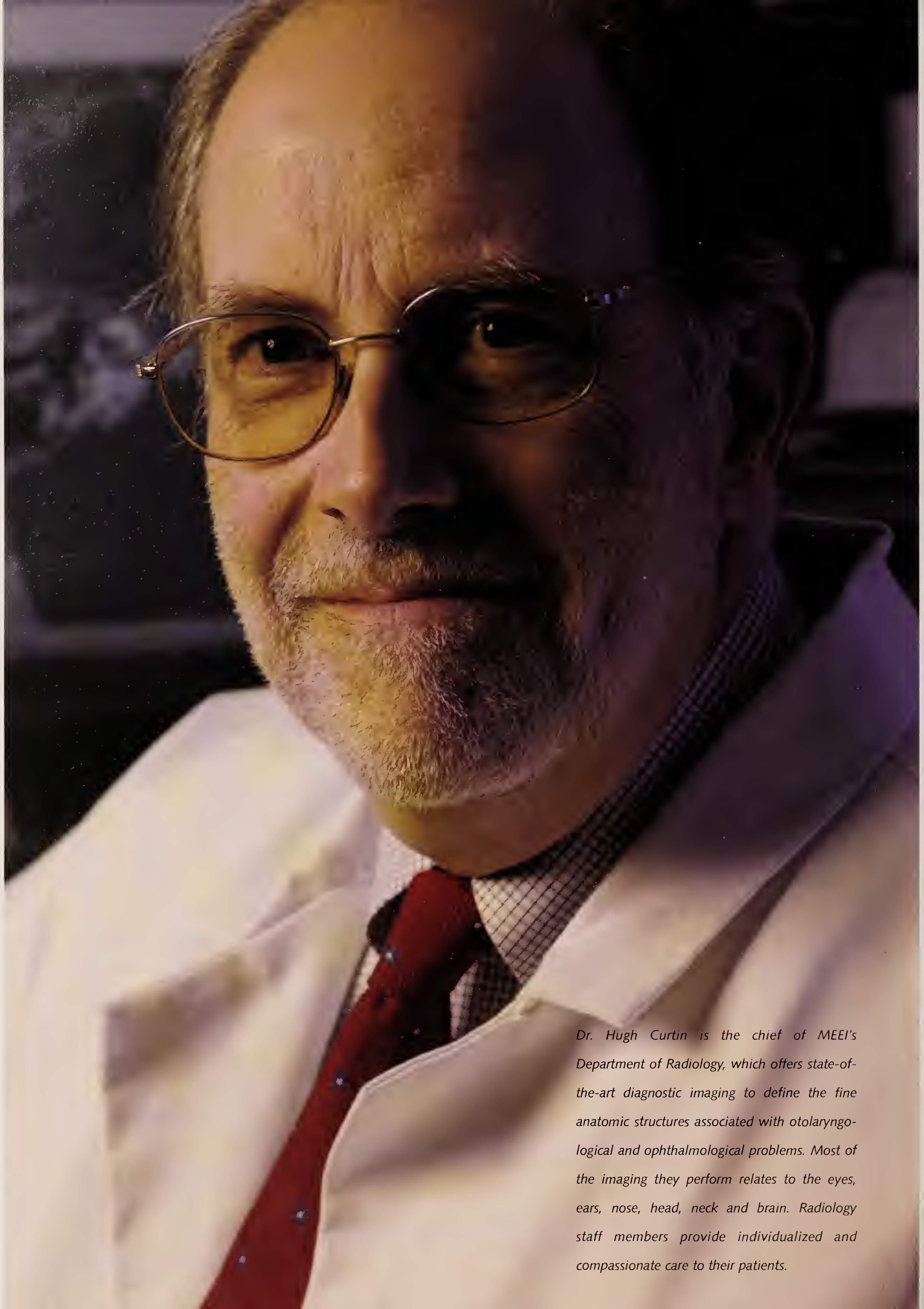
Congratulations are in order for the promotion of Dr. John Rosowski to the rank of Professor of Otology and Laryngology. We welcome several new members of the medical staff: Drs. Joshua Kessler, Dukhee Rhee, David Roberson and Jeannie Chung as otolaryngologists on the part-time faculty, and Drs. Donald Keamy, Jr., (Pediatric Otolaryngology), Dr. Stacey Gray (General Otolaryngology, MEEI), Dr. Michael Rho (General Otolaryngology, North Suburban Center), Dr. Sherif Ammar (General Otolaryngology, South Suburban Center), and Dr. Jennifer Smullen (Otology/Neurotology, MEEI) on the full-time faculty.

The Department is grateful to its patients, staff and the MEEI Board of Directors for their confidence, help and support for making this a successful year.

Joseph B. Nadol, Jr.

Joseph B. Nadol, Jr., M.D.

Chief of Otolaryngology



Dr. Hugh Curtin is the chief of MEEI's Department of Radiology, which offers state-of-the-art diagnostic imaging to define the fine anatomic structures associated with otolaryngological and ophthalmological problems. Most of the imaging they perform relates to the eyes, ears, nose, head, neck and brain. Radiology staff members provide individualized and compassionate care to their patients.

employee stars

JANUARY

Christine McLellan

Pharmacy

FEBRUARY

Anne McFadden

Clinical Laboratory/ Pharmacy

MARCH

Carolyn Shea

Glaucoma Service

APRIL

Richard Norris

Purchasing

MAY

David Katumba

Central Supply-CSR

JUNE

Linda Tomczykowski

Retina

JULY

Tulay Cakiner-Egilmez

Glaucoma Service

AUGUST

Margaret Lankow

Jenks Vestibular Lab

SEPTEMBER

Piliane Joseph

Nursing, 11th Floor

OCTOBER

Charlene Adim

Comprehensive Ophthalmology

NOVEMBER

Virginia Clancy

Facial Plastics

DECEMBER

Maureen Callahan

Nursing, 11th Floor

2005 ANNUAL REPORT

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Bruce Jordan, Vice President for Development and Public Affairs
Mary E. Leach, Director of Public Affairs

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financial statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. - Combined Balance Sheet as of September 30, 2005

ASSETS

Current Assets	
Cash and Cash Equivalents	3,671,621
Assets Whose Use is Limited Under Indenture Agreement (Required for Current Liabilities)	1,138,149
Patient Accounts Receivable (Less Allowance for Doubtful Accounts $3,186,672)	10,573,398
Other Current Assets	4,818,393
Total Current Assets	**20,201,561**
Assets Whose Use Is Limited	
Construction Fund	10,503,752
Special Cash Reserves	10,837,128
Funds Held for Research	25,132
Under Indenture Agreement	4,501,709
Total Assets Whose Use is Limited	**25,867,721**
Investments	94,283,325
Pledges Receivable, Net	1,898,615
Remainder Interest in Charitable Trusts	2,483,270
Beneficial Interest in Trusts	15,900,321
Property, Plant & Equipment (Net of Depreciation of $146,197,834)	69,280,458
Other Assets	
Intangible Assets (Net of Amortization of $1,166,868)	474,571
Deposits	899,700
Total Assets	**231,289,542**

LIABILITIES AND NET ASSETS

Current Liabilities	
Current Portion of Long-Term Debt and Capital Leases	4,371,695
Accounts Payable and Accrued Expenses	16,844,720
Accrued Interest	328,958
Estimated Third Party Settlements	2,668,044
Total Current Liabilities	**24,213,417**
Long-Term Debt, Less Current Portion	35,431,104
Accumulated Post-Retirement Benefit Obligation	354,354
Professional Liability Reserve	1,486,611
Accrued Pension Costs	8,472,214
Annuities and Unitrusts Payable	1,033,309
Total Liabilities	**70,991,009**
Net Assets	
Unrestricted for General Operations	38,998,609
Board Designated	32,146,675
Total Unrestricted Net Assets	**71,145,284**
Temporarily Restricted	39,888,025
Permanently Restricted	49,265,224
Total Net Assets	**160,298,533**
Total Liabilities and Net Assets	**231,289,542**

financial statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. - Combined Statement of Revenue and Expense of the General Funds as of September 30, 2005

NET PATIENT REVENUE

Net Patient Service Revenue	114,293,985

OTHER OPERATING REVENUE

(Including $22,682,451 from Research, Contributions and Grants)	43,895,374
Total Operating Revenue	**158,189,359**

OPERATING EXPENSES

Patient Care and Clinical	99,490,987
General and Administrative	31,498,933
Research	25,760,886
Fundraising	1,257,748
Education	2,179,493
Total Operating Expenses	**160,188,047**
Excess of Revenue of Expenses Before Prior Years' Reserves	(1,998,688)
Reduction of Prior Years' Reserves	350,743
Loss from Operations	(1,647,945)
Other Gains	2,293,606
Excess of Revenues Over Expenses	645,661
Other Support	354,371
Subtotal Increase in Unrestricted Net Assets	**1,000,032**
Adjustment for Minimum Pension Liability	(1,725,294)
(Decrease) in Unrestricted Net Assets	**(725,262)**
In addition, the Foundation received the following restricted funds income: Gifts and Bequests	6,060,505

INVESTMENT INCOME:

Interest and Dividends	(53,784)
Realized Gains on Investments	5,541,547
Unrealized Losses on Investments	(2,645,892)
Gain on Beneficial Interest in Trusts	407,174

A copy of the audited financial statements is available upon request from the Office of Public Affairs, (617) 573-3340.

providing comfort for those who wait

The MEEI dedicated its new family waiting room this year with a reception to honor trustee and generous friend, Phyllis G. Redstone. The Phyllis G. Redstone Family Waiting Room, located on the 7th floor, will provide a comfortable environment for the families of MEEI patients for years to come.

Above: (left to right): Diane E. Kaneb, Board vice-chair; Curt Smith, president; and Phyllis Redstone, trustee

2005 statistics

Inpatient Hospital: 42 beds

DISCHARGES:

Eye Discharges	287
ENT Discharges	976
Total	**1,263**
Patient Days	4,224
Average Length of Stay	3.34

Surgical Procedures

INPATIENT SURGERY:

Eye Cases	230
ENT Cases	788
Total	**1,018**

AMBULATORY SURGERY:

Eye Cases	12,968
ENT Cases	6,550
Total	**19,518**
Total Surgical Procedures	**20,536**
Ambulatory Surgical Cases Utilizing Observation Service	2,904

Outpatient Department

OPHTHALMOLOGY:

General Eye	26,701
Glaucoma	18,578
Cornea	10,072
Retina	22,457
Immunology	5,038
Neuro-Ophthalmology	4,840
Pediatric Ophthalmology and Strabismus	4,135
Eye Plastic	4,353
Electroretinography	4,892
Vision Rehabilitation	2,490
Contact Lens	4,679
Methuen Center	2,076
Stoneham Center	1,458
Total	111,769

OTOLARYNGOLOGY:

Infirmary	43,067
Stoneham Center	11,545
Quincy Center	14,509
Wellesley Center	9,254
Total	78,375
Total Outpatient Visits	**190,144**

Emergency Room

Total Visits	21,984

Special Services

AUDIOLOGY DEPARTMENT:

Outpatient Visits	13,785
Hearing Aid Center	3,267
Evoked Response	1,256
Newborn Audiology Screenings	3,641

RADIOLOGY DEPARTMENT:

Conventional Exams	2,731
CT Scan	13,960
MRI	2,801

LABORATORIES:

Bacteriology (Cultures)	12,019
Clinical Lab (Procedures)	66,997
ENT Pathology (Specimens)	14,521
Eye Pathology (Specimens)	2,810
Frozen Section Laboratory	2,334
Electrocardiograms	3,671
Fluorescein Angiography	10,203
Occupational Therapy	2,333
Optical Shop	3,236
Ultrasonography	7,149
Vestibular Laboratory	5,506
Voice and Speech Laboratory	12,445
Hyperbaric Oxygen Treatments	3,722

medical staff

Department of Anesthesiology

Chief of Anesthesiology

Salvatore J. Basta, M.D.

Clinical Director

Dr. Joseph Bayes

Director of SurgiCenter Anesthesia

Dr. Peng Xiao

Director, Pediatric Anesthesia

Dr. Xiangwei (Shannon) Zhang

Anesthesiologists

Malcolm J. Heslop, M.D.
Dr. Jin W. Kim, M.D.
Dr. Nancy L. Gessner, M.D.

Associate Anesthesiologists

Brian D. Blondin, M.D.
Rebecca J. Leong, M.D.
Ilya Malikin, M.D.
Janine T. Rodrigues-Saldanha, M.D.
Anthony M. Sordillo, M.D.
Lily G. Tabbal, M.D.
Gabriele F. Troll, M.D.

Assistant Anesthesiologists

Maria M. Bortkiewicz, M.D.
Artem Grush, M.D.
Bil L. Ragan, M.D.

Medical Unit

Medical Unit Director

Robert Hughes, M.D.

Medical Unit Staff

Diana Brainard, M.D.
Samuel Brown, M.D.
Andrew Chan, M.D.
Cynthia Cooper, M.D.
Carol Ehrlich, M.D.
Brendan Everett, M.D.
Yariv Houvras, M.D.
Christiana Iyasere, M.D.
Herbert Lin, M.D.
Siddhartha Mukherjee, M.D.
Jonathan Passeri, M.D.
Allan Pineda, M.D.
Elizabeth Speliotes, M.D.
Jatin Vyas, M.D.
Emily Wan, M.D.
Ramnik Xavier, M.D.

Department of Ophthalmology

Chief of Ophthalmology

Joan W. Miller, M.D.

Associate Chiefs of Ophthalmology

Dimitri T. Azar, M.D.
Donald J. D'Amico, M.D.
John I. Loewenstein, M.D.

ACTIVE STAFF

Surgeons in Ophthalmology

Paul Arrigg, M.D.
Dimitri T. Azar, M.D.
Ann M. Bajart, M.D.
Eliot L. Berson, M.D.
Gary E. Borodic, M.D.
Robert J. Brockhurst, M.D.
Sheldon M. Buzney, M.D.
Romeo Chang, M.D.
Eugene C. Ciccarelli, M.D.
Donald J. D'Amico, M.D.
Claes H. Dohlman, M.D.
Thaddeus P. Dryja, M.D.
Elliot M. Finkelstein, M.D.
Richard P. Floyd, M.D.
C. Stephen Foster, M.D.
Anthony J. Fraioli, M.D.
Alexander R. Gaudio, M.D.
Evangelos S. Gragoudas, M.D.
Arthur S. Grove, M.D.
Tatsuo Hirose, M.D.
Mark S. Hughes, M.D.
Mohandas M. Kini, M.D., Ph.D.
Arnold J. Kroll, M.D.
Deborah P. Langston, M.D.
Simmons Lessell, M.D.
John I. Loewenstein, M.D.
Peter L. Lou, M.D.
Robert A. Lytle, M.D.
Joan W. Miller, M.D.
Shizuo Mukai, M.D.
Michael K. Pinnolis, M.D.
Ronald C. Pruett, M.D.
Joseph F. Rizzo III, M.D.
Peter A. D. Rubin, M.D.
Edward A. Ryan, M.D.
Delia N. Sang, M.D.
Johanna M. Seddon, M.D.
Jonathan H. Talamo, M.D.
Daniel J. Townsend, M.D.
David S. Walton, M.D.
John J. Weiter, M.D., Ph.D.
Michael S. Wiedman, M.D.
Lucy H. Y. Young, M.D., Ph.D.

Associate Surgeons

Maida P. Antigua, M.D.
Nathalie Azar, M.D.
Reza Dana, M.D., M.P.H.
Andrew J. Gillies, M.D.
Edward F. Goodman, M.D.
Cynthia L. Grosskreutz, M.D., Ph.D.
Bonnie An Henderson, M.D.
Kevin J. Kaufman, M.D., Ph.D.
Mark A. Latina, M.D.
David G. Lotufo, M.D.
Louis R. Pasquale, M.D.
David G. Perkins, M.D.
Roberto Pineda II, M.D.
Francis Sutula, M.D.
David M. Tracy, M.D.
Susan Wong, M.D.

Assistant Surgeons

Jorge G. Arroyo, M.D.
Sherleen Chen, M.D.
Teresa C. Chen, M.D.
Kathryn Colby, M.D., Ph.D.
Sandra L. Cremers, M.D.
Mark Dacey, M.D.
Elizabeth Daher, M.D.
Aaron M. Fay, M.D.
Bradley Foster, M.D.
David Greenseid, M.D.
Robert Lacey, M.D.
Richard Low, M.D.
Mei Mellott, M.D.
Douglas Rhee, M.D.
Claudia U. Richter, M.D.
Neal G. Snebold, M.D.
William Stinson, M.D.
Jeffrey L. Taveras, M.D.
Richard S. Weinhaus, M.D.
Janey Lee Wiggs, M.D., Ph.D.

Assistants in Ophthalmology

Adam Beck, M.D.
Robert J. D'Amato, M.D., Ph.D.
Matthew Gardiner, M.D.
Ioannis Glavas, M.D.
Gerri Goodman, M.D.
Neil Gross, M.D.
Debra Lynn Halpern, M.D.
Jo-Ann E. Haney-Tilton, M.D.
Mark Hatton, M.D.
Mami Iwamoto, M.D.
Sandeep Jain, M.D.
Ivana Kim, M.D.
Daniel Laby, M.D.
Kameran Lashkari, M.D.
Raymond Magauran, M.D.
John Mandeville, M.D.
Mary Jane McCarron, M.D.
Margaret McLaughlin, M.D.
Samir Melki, M.D.
George Papaliodis, M.D.
Ramy Rizkalla, M.D.
Kimberly Sippel, M.D.
Steven Stetson, M.D.
Jennifer Sun, M.D.
Nigel Timothy, M.D.

ASSOCIATE STAFF

Surgeons

Stephen J. Fricker, M.D.
Kenneth R. Kenyon, M.D.
James R. Lee, M.D.
Felipe I. Tolentino, M.D.
Clement Trempe, M.D.

Associate Surgeons

Richard Dallow, M.D.

Assistant Surgeons

Macie Finkelstein, M.D.
Evan B. Gold, M.D.
David Z. Greenseid, M.D.
Paul L. Gunderson, M.D.
Ernest Kornmehl, M.D.
Steven M. Patalano, M.D.
Vincent J. Patalano II, M.D.
Donald W. Putnoi, M.D.
Jill A. Smith, M.D.

Assistants in Ophthalmology

Frederick C. Armbruster, M.D.
Eugenio Candal, M.D.
Cindy W. Chao, M.D.
David E. Eisenberg, M.D.
C. Douglas Evans, M.D.
Laura Fine, M.D.
Bradley Foster, M.D.
Bruce J. Gillers, M.D.
Jeffrey Heier, M.D.
Mitesh Kapadia, M.D.
Debra Kroll, M.D.
Marc Leibole, M.D.
M. Lisa McHam, M.D.
Michael G. Morley, M.D.
Mahnaz Nouri, M.D.

Peter Rapoza, M.D.
Thomas C. Smith, M.D.
Mitchell Strominger, MD
William M. Tang, M.D.
Paul J. Wasson, M.D.
Lawrence E. Weene, M.D.

COURTESY STAFF

Surgeons

A. Robert Bellows, M.D.
Albert R. Frederick Jr., M.D.
Robert A. Gorn, M.D.
B. Thomas Hutchinson, M.D.
J. Wallace McMeel, M.D.
Bradford Shingleton, M.D.

Associate Surgeons

Frank G. Berson, M.D.
Michael Chang, M.D.
Ralph H. Hinckley, M.D.
Brent Lambert, M.D.
Howard Marton, M.D.
Robert A. Petersen, M.D.
James W. Rosenberg, M.D.
Perry Rosenthal, M.D.
Trexler Topping, M.D.
Clement Trempe, M.D.

Assistant Surgeons

Mark B. Abelson, M.D.
Claudia A. Arrigg, M.D.
Richard H. Feit, M.D.
Jeffrey P. Gilbard, M.D.
Jay Kaufman, M.D.
Ernst J. Meyer, M.D.
Richard Weinhaus, M.D.

Assistants in Ophthalmology

Caroline Baumal, M.D.
Paul E. Beade, M.D.
Stephen Belmonte, M.D.
Michael J. Bradbury, M.D.
Joseph F. Burke, M.D.
John B. Constantine, M.D
Jay S. Duker, M.D.
Deborah S. Eappen, M.D.
Bishara Faris, M.D.
Edward Feinberg, M.D.
George T. Frangieh, M.D.
Nicoletta Fynn-Thompson, M.D.
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Lawrence Weene, M.D.
David Yi, M.D.
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Thomas P. Cronin, M.D.
George Garcia, M.D.
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Eeva-Liisa Martola, M.D.
George Olive, M.D.
Charles L. Schepens, M.D.
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Richard J. Simmons, M.D.

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Roland Houle, M.D.
David Hutchison, M.D.

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Arthur Morrissey, M.D.

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Firmon E. Hardenbergh, M.D.
Bernard Schwartz, M.D., Ph.D.

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Richard Robb, M.D.

Assistant Surgeon

David Miller, M.D.

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Audrey Chan, M.D.
R. Paul Chan, M.D.
Susie Chang, M.D.
Eva-Marie Chong, M.D.
Mona Harissi-Dagher, M.D.
Jose de la Cruz, M.D.
Janie Ho, M.D.
Peter Hovland, M.D.
Relief Jones, M.D.
Ula Jurkunas, M.D.
Bilal Khan, M.D.
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Navin Prasad, M.D.
Stephen Smith, M.D.
Lucia Sobrin, M.D.
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Nadia Waheed, M.D.
Jeffrey Wentzloff, M.D.

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Christine Ament, M.D.
Stacey Brauner, M.D.
Jessica Ciralsky, M.D.
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Raymond Wee, M.D.
Corey Westerfeld, M.D.
Torsten Wiegand, M.D.

RESEARCH APPOINTMENTS

Research Associates

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Meredithe L. Applebury, Ph.D.
Oleg Bulgakov, Ph.D.
Margaret DeAngelis, Ph.D.
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Tomoki Isayama, Ph.D.
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Clint L. Makino, Ph.D.
Jarema Malicki, Ph.D.
Yoshihiro Omori, Ph.D.
Francesca Pignoni, Ph.D.
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Yajie Wang, Ph.D.
Xiao-Hong Wen, Ph.D.
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Dayse de Sena, M.D.
Yan Guo, M.D.
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Toshio Hisatomi, M.D., Ph.D.
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Jae Yong Kim, M.D.
Tae-Im Kim, M.D.
Takashi Kojima, M.D.
Huy Tu Nguyen, M.D.
Kousuke Noda, M.D., Ph.D.
Mika Noda, M.D.
Ana Maria Passerotti, M.D.
Rony Sayegh, M.D.
Haicheng She, M.D., Ph.D.
Miyahara Shinsuke, M.D.
Faisal Tobaigy, M.D.
Maria Isabela Triana, M.D.
Hyeong Yu, M.D.
Hadi Zambarakji, M.D.
Tian Yi Zhang, M.D.

Associate in Ophthalmology

Basil Pawlyk

Comprehensive Ophthalmology Service

Bonnie An Henderson, M.D., Director

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Diabetic Retinopathy Service

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Electroretinography Service

Eliot L. Berson, M.D., Director

Eye Emergency Department

Matthew Gardiner, M.D., Director

Epidemiology Unit

Johanna M. Seddon, M.D., Director

Eileen Lowell R.N
Nurse Manager

Boasting an average tenure of 15 years, MEEI nurses, such as Pediatrics Nurse Manager Eileen Lowell, R.N., provide dedicated and specialized care to patients and their families. Skilled nurses are key to MEEI's mission. They deliver specialized care derived from the application of the latest scientific knowledge, with the ultimate goal of restoring patients to optimal health.

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Stoneham Eye Center
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Dong Hong, Ph.D.
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Ben Z. Pilch, M.D.
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Artur Zembowicz, M.D.
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Jessica Fewkes, M.D.
Consultant in Neurology
Robert A. Levine, M.D.
Consultant in Otoneurology
Richard F. Lewis, M.D.

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Edward E. Jacobs, M.D.
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Arthur M. Lauretano, M.D.
Trevor J. McGill, M.D.
Jo Shapiro, M.D.
J. Nicholas Vandemoer, M.D.
David M. Vernick, M.D.
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Ramsey Alsarraf, M.D. (plastics)
Neil Bhattacharyya, M.D.
Robert A. Frankenthaler, M.D.
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Alex Grilli, M.D.
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Molly S. Zirkle, M.D. (LOA)
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Johnson Wong, M.D.
Consultant in Dermatologic Surgery
Oon T. Tan, M.D.
Consultants in Plastic Surgery
William G. Austen, M.D.
Richard A. Bartlett, M.D.
Daniel A. DelVecchio, M.D.
G. Gregory Gallico, M.D.
Peter E. Gee, M.D.
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Leonard B. Miller, M.D.
Jonathan Schuster, M.D.
Sheldon Sevinor, M.D.
Jonathan Winograd, M.D.
Michael J. Yaremchuk, M.D.
Consultants in Hyperbaric Medicine
Adrian Gollas, M.D.
David A. Peak, M.D.
Robert L. Sheridan, M.D.
John R. Sims, M.D.
Consultant in Maxillofacial Prosthetics
Matthew J. Jackson, M.D.
Consultants in Oral/Maxillofacial Surgery
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John Buehler, M.D., D.M.D.
Leonard B. Kaban, M.D., D.M.D.
David Keith, M.D., D.M.D.
Carol Lorente, D.M.D.
Bonnie Padwa, M.D., D.M.D.
Willie L. Stephens, D.D.S.
Maria J. Troulis, D.D.S.
Consultant in Pain Management
Martin Acquadro, M.D.

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Consultant in Allergy and Immunology
Richard A. Moscicki, M.D.

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Ely A. Kirschner, M.D.
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James L. Demetroulakos, M.D.
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Alfred D. Weiss, M.D. (Neurology)

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Thomas R. Klein, M.D.
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David L. Pierce, M.D.
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Cristian M. Slough, M.D.

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Carol M. Lewis, M.D.
David A. Lewis, M.D.
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Andrew R. Scott, M.D.
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Wade Chien, M.D.
Research Fellows
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Eduardo Corrales, M.D.
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Christian Grimm, Ph.D.
Alexander Gutschalk, M.D.
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Ming-Yee Lin, M.D.
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Quigwie Ruan, M.D.
Pascal Senn, M.D.
Faramarz Alizadeh Shabdiz, M.D.
Fuxin Shi, M.D.
Hyei-Jung Sin, M.D.
Mehmet Somdas, M.D.
Kennyn Statler, Ph.D.
Chitsuda Wacharasindhu, M.D.
Haobing Wang, M.S.
Zhigang Xu, Ph.D.

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George Kazda, M.D., Medical Director
Facial Plastics and Reconstructive Surgery Service
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General Otolaryngology
Gregory W. Randolph, M.D., Director
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Daniel G. Deschler, M.D., Director
Intermediate Care Unit
Daniel G. Deschler, M.D., Director
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Glenn W. Bunting, M.S, Clinical Director
Ramon A. Franco, Jr., M.D., Medical Director

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Audiology
Chris Halpin, Ph.D.
Barbara S. Hermann, Ph.D.
Clinical Outcomes Research Unit
Richard E. Gliklich, M.D., Director
Cochlear Implant Research Laboratory
Donald K. Eddington, Ph.D., Director
Darlene Ketten, Ph.D.
Joseph Tierney, S.M.
Eaton-Peabody Laboratory of Auditory Physiology
M. Charles Liberman, Ph.D., Director
Gerald Bailey, M.D., Ph.D., D.D.S.
Louis Braida, Ph.D.
M. Christian Brown, Ph.D.
Steven H. Colburn, Ph.D.
Bertrand Delgutte, Ph.D.
Albert Edge, Ph.D.
Dennis M. Freeman, Ph.D.
Barbara C. Fullerton, Ph.D.
John J. Guinan, Ph.D.
Alexander Gutschalk, Ph.D.
Kenneth E. Hancock, Ph.D.
Stefan Heller, Ph.D.
Stephane Maison, Ph.D.
Jennifer R. Melcher, Ph.D.
Andrew Oxenham, Ph.D.
William T. Peake, Ph.D.
John J. Rosowski, Ph.D.
Christopher Shera, Ph.D.
Mark Tramo, M.D., Ph.D.
Thomas F. Weiss, Ph.D.
Neurochemistry Unit
William F. Sewell, Ph.D.
Electron Microscopy Laboratory
Charles M. Liberman, Ph.D., Director
Jenks Vestibular Lab
Conrad Wall,III, Ph.D., Director
Jenks Vestibular Physiology Lab
Daniel M. Merfeld, Ph.D., Director
Lionel Zupan, Ph.D.
Otopathology Laboratory
Saumil N. Merchant, M.D., Director
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Saumil Merchant, M.D., Co-Director
Joseph B. Nadol, Jr., M.D., Co-Director

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A special thank you to the Friends of MEEI for their continuing support. The proceeds from funds raised at their 2005 gala were presented to Drs. Derrick Lin and Cynthia Grosskreutz to support their research efforts. For information on joining the Friends or to find out about their Spring benefit, please call 617-573-3164.

Department of Radiology

ACTIVE STAFF

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Assistant in Radiology
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Mary E. Cunnane, MD
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Michael H. Lev, M.D.
James D. Rabinov, M.D.
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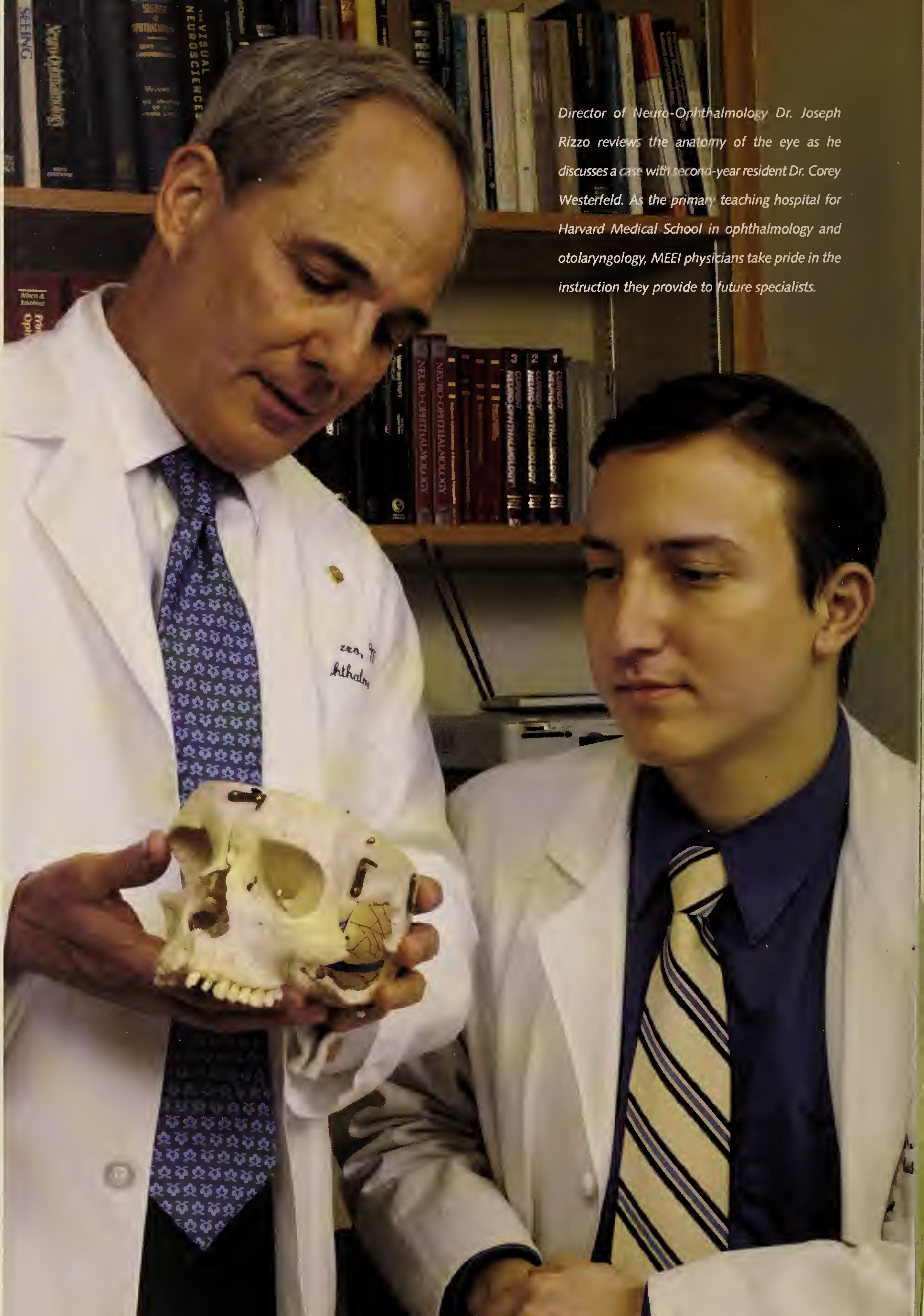

Director of Neuro-Ophthalmology Dr. Joseph Rizzo reviews the anatomy of the eye as he discusses a case with second-year resident Dr. Corey Westerfeld. As the primary teaching hospital for Harvard Medical School in ophthalmology and otolaryngology, MEEI physicians take pride in the instruction they provide to future specialists.

ASSOCIATE STAFF

Associate Radiologist
R. Gilberto Gonzalez, M.D.

EMERITUS STAFF

Consultant in Radiotherapy
Milford Schulz, M.D.

CONSULTING STAFF

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Clinical Associate in Radiology
Herman D. Suit, M.D.

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Rick Mason (effective Jan. 3, 2005)
Administrative Officer for Otolaryngology
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THE 1824 CIRCLE

Unrestricted giving allows the Infirmary to respond flexibly to immediate priorities. To encourage unrestricted philanthropy at the leadership level, the Infirmary has established a special recognition group within the Reynolds Society known as The 1B24 Circle. Membership is reserved for friends who give $10,000 or more on an unrestricted basis during the fiscal year. The Infirmary thanks the following 1B24 Circle members for their gifts made October 1, 2004 through September 30, 2005.

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THE ANNIE SULLIVAN SOCIETY

The Annie Sullivan Society honors and recognizes the many thoughtful and generous individuals who have named the Massachusetts Eye and Ear Infirmary in their wills, planned gifts or estate plans. For more information about the benefits of the Annie Sullivan Society and information on how you can join, please contact Melissa Paul at 617-573-416B.

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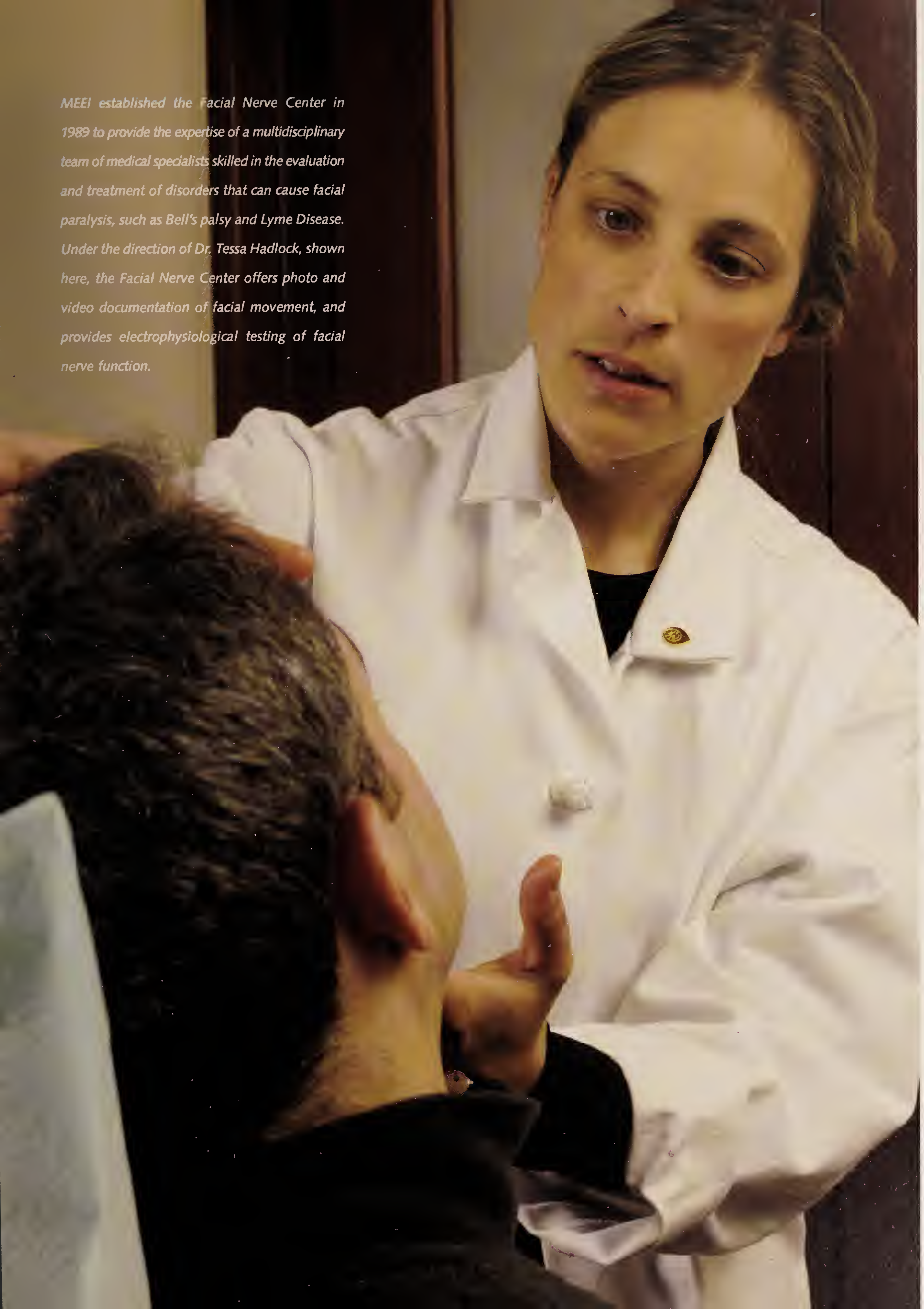

MEEI established the Facial Nerve Center in 1989 to provide the expertise of a multidisciplinary team of medical specialists skilled in the evaluation and treatment of disorders that can cause facial paralysis, such as Bell's palsy and Lyme Disease. Under the direction of Dr. Tessa Hadlock, shown here, the Facial Nerve Center offers photo and video documentation of facial movement, and provides electrophysiological testing of facial nerve function.

DID YOU KNOW?

The Parent in the Operating Room program, the first of its kind, was developed at MEEI in 1986 by Carol A. Covell, R.N., M.S., Executive Vice President of Patient Services, to allow parents to comfort their child in the Operating Room before surgery. Before surgery, a Child Life Specialist provides parents and child with an overview of what to expect during the hospitalization and tours of the facility. During recovery, a parent is encouraged to stay overnight with his or her child.

combating hearing loss

Axel Eliasen, a retired electrical engineer and the son of Danish immigrant pioneers, initiated a professorship in otology (hearing), named for his parents, Gudrun and Nels Eliasen. His wonderful gift resulted from an introduction his friend, Eaton-Peabody Laboratory scientist Dr. William Peake, made more than two years ago to middle ear specialist Dr. Saumil Merchant. Mr. Eliasen, whose father had a hearing problem, also lost hearing in his right ear, dating to WWII as a navigator in a B25H bomber. Mr. Eliasen hopes his gift will fund research that will enable others to have their hearing restored.

Above: (left to right): Otologist Saumil Merchant, M.D., William Peake, Ph.D., Axel Eliasen and MEEI Chairman George Rabstejnek

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Eye and Ear
Infirmary

2006

MASSACHUSETTS EYE AND EAR INFIRMARY

annual report

dear friends:

It is a pleasure to introduce myself as President and CEO of the Massachusetts Eye and Ear Infirmary (MEEI). I am excited to be a part of this organization. After it was announced that I would be joining the MEEI team, I began hearing from people all over, many of whom were eager to tell me about their experiences at the hospital. Each comment shared the same theme: the care at MEEI is exemplary. Many volunteered that MEEI and its physicians have made a huge difference in their lives.

Having worked in academic health care in Boston for almost 15 years, it is especially gratifying to hear and see firsthand how the MEEI's reputation is reality. This hospital has a solid track record of cutting-edge research, excellent teaching, and life-changing medical care. It is our goal to strengthen and expand that position.

In this Annual Report, you will read about some of this year's advances in patient care, technology and research that will help improve the lives of many. I hope you enjoy this publication. Please join me in making this wonderful institution even better in the years to come.

Sincerely,

John Fernandez
President and CEO

On the cover: *The members of MEEI's glaucoma research team (shown from left to right), Drs. Janey Wiggs, Louis Pasquale, Cynthia Grosskreutz, Teresa Chen and Douglas Rhee, are working together to identify the causes of, and ultimately, find new cures for this blinding disease. Their research could one day help to eliminate glaucoma, which is the second leading cause of blindness in the United States.*

report of the CHAIR OF THE BOARD

Fiscal year 2006 was a year of progress that will transform the Massachusetts Eye and Ear Infirmary (MEEI), and the care that we will be able to provide to our patients, for years to come. We established new clinical and research programs, added 10 outstanding new physicians to our hospital-based medical staff, completed major renovations, added the latest diagnostic and treatment technology, and launched the first phase of an electronic medical system, which may be the most important advance in patient care this decade. The Board approved plans for the new, state-of-the-art Centers for Surgical Care.

We established a new clinical and research program in auditory brainstem implants — the first of its kind in New England — and significantly expanded our clinical and research programs in tinnitus. We welcomed new researchers, and MEEI's physicians and researchers were recognized with several major awards and prizes for their important contributions to improving the health of individuals throughout the world.

On Nov. 7, in the United States District Court for the District of Massachusetts, a jury found in favor of MEEI on claims of unjust enrichment and unfair trade practices against QLT Inc. The jury found QLT Inc. liable for 3.01% royalty on worldwide net sales of Visudyne, as well as for MEEI's attorney's fees. The case relates to the development of Visudyne as a treatment for the wet form of macular degeneration, the leading cause of blindness in people over the age of 50 in the western world. MEEI is proud of the pioneering work of its researchers, Drs. Joan W. Miller and Evangelos Gragoudas, in the development of this landmark treatment.

The Gudrun Larsen Eliasen and Nels Kristian Eliasen Professorship of Otology and Laryngology, made possible by the generosity of Axel Eliasen and others, was established and endowed in perpetuity through Harvard Medical School. Dr. Saumil Merchant is the first recipient of the Eliasen Professorship, which will support an ongoing succession of senior researchers interested in conditions that affect the ear.

Curt Smith, president for 17 years, announced in 2006 that he would step down. MEEI has come a long way from the losses of the early 1990s, thanks to Curt's efforts. On behalf of the Board of Directors, I would like to express our appreciation to him for all of his hard work and dedication over the years.

Here are more highlights from the past year:

MEDICAL STAFF EXCELLENCE

The hospital's success this year would not have been possible without the excellence of our medical staff and the leadership of Dr. Salvatore Basta, Chief of Anesthesia; Dr. Hugh Curtin, Chief of Radiology; Dr.

Joan W. Miller, Chief of Ophthalmology; Dr. Joseph B. Nadol Jr., Chief of Otolaryngology; and Dr. Robert Hughes, Chief of the Medical Unit. In ophthalmology we welcomed Drs. Dean Cestari, neuro-ophthalmology; Mary Lou Jackson, Director of Vision Rehabilitation; Ula Jurkunas, cornea; and Lucia Sobrin, retina. In otolaryngology we welcomed Drs. Ronald de Venecia, otology; Stacey Gray, general otolaryngology; Alex Grilli, general otolaryngology at the MEEA South Suburban Satellite; Adrian Priesol, otology; Michael Rho, general otolaryngology at the MEEA North Suburban Center in Stoneham; and Phillip Song, laryngology. Dr. Reza Dana was appointed as Director of the Cornea and Refractive Surgery Service, and Dr. Ramon A. Franco, Jr., was named Director of the Division of Laryngology and medical director of the Voice and Speech Laboratory.

MEDICAL EDUCATION AND HONORS

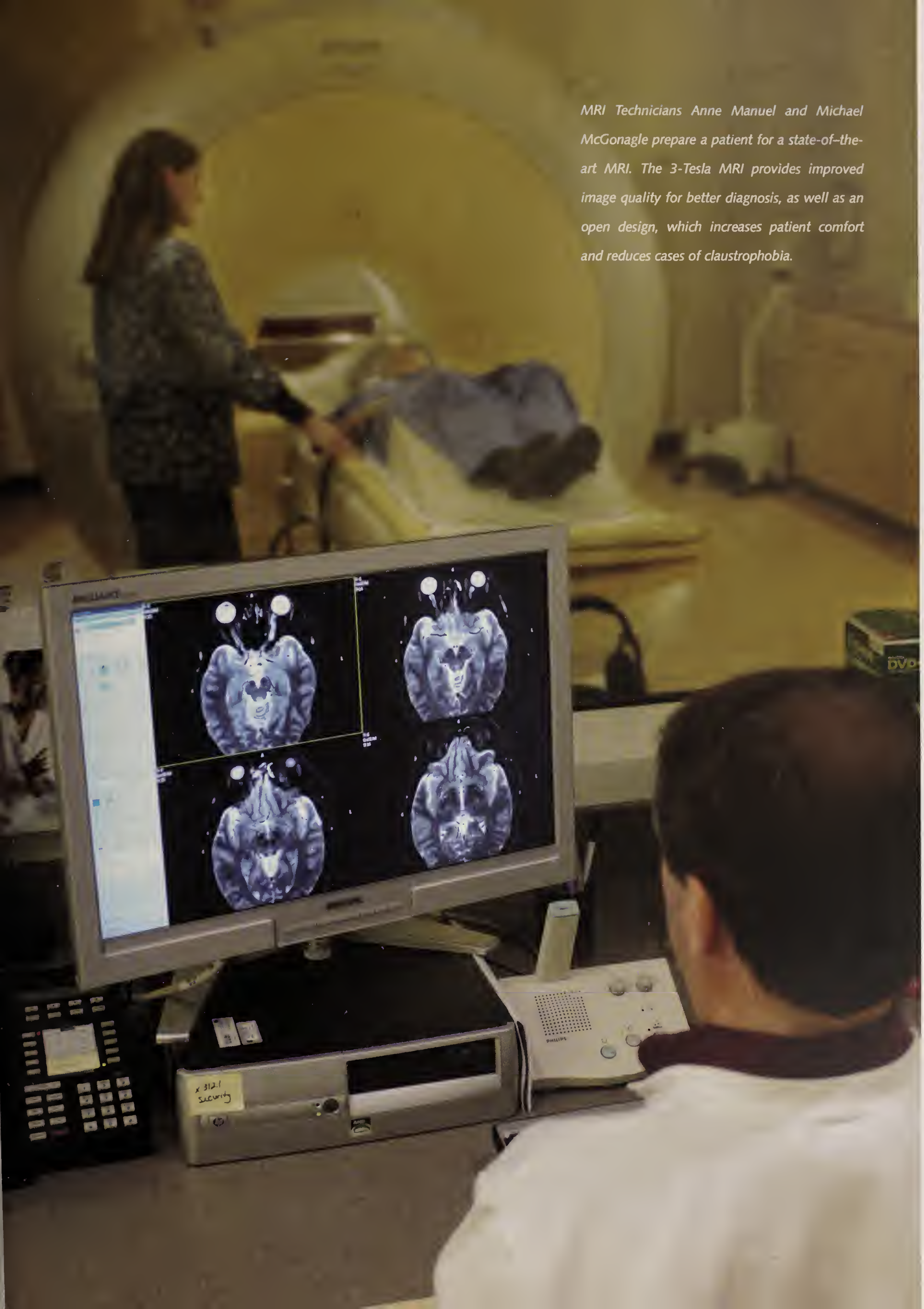
Dr. Mack Cheney was named Professor of Otology and Laryngology in May 2006. Dr. Michael McKenna was promoted to Professor of Otology and Laryngology on Oct. 1, 2006. Dr. George Papaliodis was named "Teacher of the Year" in ophthalmology; Dr. Parviz Janfaza was honored with the William W. Montgomery Award for Excellence in Teaching; and Dr. Kevin Emerick received the Otolaryngology Resident Teaching Award. Many members of our medical staff, too numerous to mention, received recognition for their work.

ENHANCING PATIENT CARE

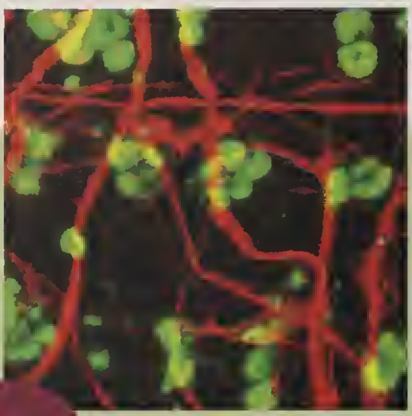
MEEI continued to respond to meet the needs of its patients and enhance their experience at the hospital as well as their safety. The Radiology Department acquired new CT and MRI systems. This state-of-the-art equipment will keep MEEI at the forefront of emerging technological innovations that will benefit our patients. MEEI staff continued to work hard this year to ensure a safe patient environment. With the goal to improve the understanding of and participation in the medication reconciliation process, a JCAHO National Patient Safety Goal, the departments of Nursing and Pharmacy collaborated to educate MEEI staff and developed a hospital policy and educational posters for each unit, followed by a collaborative meeting related to medication reconciliation in September.

CONSTRUCTION PROGRESS

MEEI completed the renovations of the seventh floor offices and cafeteria and has now initiated construction on new pediatric exam clinics. These new clinics expand the outpatient capacities of both the Pediatric Ophthalmology and Pediatric Otolaryngology services and will eventually accommodate growth resulting from the newly planned Surgical Services expansion. The Building Committee piloted the planning for a redevelopment of the MEEI Surgical Services program that will provide a modern, state-of-the-art surgical theater for our physicians. The plan's design includes separate pediatric and adult patient processing and waiting areas to support the MEEI's burgeoning pediatric surgery program in a more specialized environment.



MRI Technicians Anne Manuel and Michael McGonagle prepare a patient for a state-of-the-art MRI. The 3-Tesla MRI provides improved image quality for better diagnosis, as well as an open design, which increases patient comfort and reduces cases of claustrophobia.



on the cutting edge

Those of us with normal hearing are able to localize sounds in space with amazing accuracy. To do this, our brain compares the intensity (or time of arrival) of a sound as it reaches the two ears. Scientists have always wondered how we maintain the accuracy of this sound localization ability in the face of changing hearing levels, as might happen with an ear infection or wax build-up in one ear. In the December 2006 issue of *Nature Neuroscience*, a team of researchers from the Eaton-Peabody Laboratory reported their discovery that the output of each ear is controlled by a tiny feedback system, which can fine-tune the nerve-fiber circuits that compute sound location. Although the existence of this feedback system had been known for decades, its functional role was not previously understood.

GENEROUS FRIENDS

With each passing year our generous friends become more instrumental to the success of MEEI's mission. We received three $1 million gifts, saw strong growth in Reynolds Society membership, and had a very successful Boston Marathon fundraising effort, with special thanks to John Hancock. In all, we raised more than $12,600,000, which is a 26% increase over the past two years.

Highlights of fiscal year 2006 include the following major gifts, planned gifts, grants and bequests.

> A gift of $1.8 million from Grant and Helene Wilson to develop clinical, and research and development programs in auditory brainstem implants

> An anonymous grant of $1 million to support the new Tinnitus Center

> A pledge totaling $1 million from Mr. Lakshmi Mittal to support the middle-ear research efforts of Drs. Merchant and McKenna

> A pledge of $500,000 from Diane E. and Al Kaneb for urgent institutional needs

> A pledge of $500,000 from Bill Darling and his family for a total perioperative system

> A grant of $306,000 from the Foundation Fighting Blindness for ophthalmology research efforts

> A pledge of $300,000 from Mr. and Mrs. John R. Bertucci for the research and international educational missions of Dr. Gregory Randolph

> A pledge of $250,000 from anonymous grateful patients for the Eliasen Professorship

> Gifts totaling $250,000 from Mr. Kenneth Griffin for the new Tinnitus Center

> A grant of $250,000 from the Lincy Foundation for age-related macular degeneration research

> A gift of $250,000 from Mrs. Neil Tillotson to launch a new program in the immunology of hearing loss under the direction of Dr. Albert Edge

> A gift of $225,000 from Jack and Shelley Blais for the new Tinnitus Center

> Grants totaling $165,000 from Research to Prevent Blindness for ophthalmology research

> Grants totaling $155,000 from the Massachusetts Lions Eye Research Fund for eye research

> A pledge totaling $150,000 from William E. Roman for urgent institutional needs

I am delighted by the increasing generosity of MEEI friends, which is so critical to funding our mission. As we all know, reimbursement rates continue to be low and alone will not support the capital needed for growth to serve our patients.

BUSINESS DEVELOPMENT

Royalties from licensing intellectual property developed at MEEI continues to grow substantially with gross revenues exceeding $2.6 million in fiscal year 2006, more than a 13-fold increase from fiscal year 2000 and more than $1 million than last year. Concerted mediation and legal efforts in fiscal year 2006 have yielded large gains in early fiscal 2007, including a $1.25 million payment for MEEI rights in thalidomide analogs and the favorable jury verdict as mentioned previously in the QLT case. MEEI negotiated and executed a license to Eyetech Pharmaceuticals (now known as osi/eyetech) early in fiscal year 2006 for certain technology-related to microspheres developed by Drs. Adamis, Carrasquillo, Gragoudas and Miller. MEEI also executed a license with SaberTech Inc. for commercialization of ROSO (the repository of ophthalmic surgical outcomes, previously known as OASIS), which allows medical residents, attendings, and surgeons throughout the nation to track and monitor their success with cataract surgery. In addition, six patents issued or were allowed in fiscal year 2006.

2006 reynolds society dinner gala

The 20th Annual Reynolds Society Dinner and Achievement Awards gala was held on Friday, Nov. 3 at the Boston Park Plaza Hotel. The event, named for MEEI co-founder Dr. Edward Reynolds, honors friends who contribute $2,500 or more to MEEI in a given fiscal year (Oct. 1 to Sept. 30). The highlight of the evening included inspirational speakers and awardees, including the Boston Cured Cancer Club, a support group based at MEEI for laryngectomees and their families; Jim Stovall, motivational speaker and president of the Narrative Television Network; and A. Raymond Tye, Boston businessman and philanthropist. Lesley Stahl, Emmy-award winning journalist and "60-Minutes" co-host, was mistress of ceremonies. For more information about joining the Reynolds Society, contact Melissa Paul at 617-573-4168. The 2007 Reynolds Society Dinner will be held on Nov. 2 at the Fairmont Copley Hotel. We hope to see you there.

Above: (left to right): Karen Burns, president of the 2006 Reynolds Society Achievement Award winning group, the Boston Cured Cancer Club, and Lesley Stahl.

INTERNATIONAL PROGRAM

MEEI treated international patients from 90 countries. Once again, generous support from donors such as the Ray Tye Medical Aid Foundation has made it possible for two children from Belarus, both Chernobyl victims, to be treated at MEEI for newly diagnosed thyroid cancer.

MARKETING

The Marketing Department completed phase II of the market research program designed to gather information from referring physicians. The study with physicians was intended to complement the consumer market research done at MEEI last year. Marketing continued to build the ongoing partnership between the hospital and WGBH (Channel 2) by creating new TV spots for some of our specialties and an outside agency was hired to create a brand tagline and radio spot. Marketing also worked with MEEI friend Norman Knight to develop a new PSA, which aired on Greater Media radio stations, and a Hyperbaric Medicine brochure, which was distributed to firefighters, EMTs, Wound Centers and Emergency Departments in the Greater Boston area. Trustee Roberta Siegel was influential in gaining air time for MEEI brand public service announcements on WCRB and its four sister stations. We are most grateful to Mr. Knight and Mrs. Siegel for their continued support, assistance and friendship.

COMMUNITY BENEFITS

MEEI and its physicians continued their commitment to providing service to the community through a variety of projects. The Vision and Hearing Care Program cared for the increasing number of children at the Neighborhood House Charter School in Dorchester, Mass., under the direction of Dr. Melanie Kazlas and Ellen O'Neil, Sc.D. We also collaborated with Prevent Blindness Massachusetts to provide free eye exams to adults in the Somerville Center for Adult Learning Experiences (S.C.A.L.E.). In early fiscal year 2007, Prevent Blindness Massachusetts honored Susan Sproviero, Dr. Chris Andreoli and Tom Merrill, O.D., with "People of Vision" awards for their efforts with this program. The Audiology Department's sixth annual "Have You Heard" seminar, organized by Sharon Kujawa, Ph.D., was a resounding success. We are proud of our community benefits activities and appreciative of the generosity of all who volunteer to help.

FINANCIAL NEWS

Each fiscal year brings its own set of challenges and fiscal year 2006 was no exception. During the year we experienced some loss of patient volume due to turnover on the physician staff and also had to absorb a major reduction in Medicare payments for certain radiology procedures. Our receivables continued to be strong and we are in the top percentile of hospitals in this arena. I am pleased to say that MEEI ended the year with a bottom line surplus of over $1.4 million.

A substantial amount of time this year was spent addressing capital needs of the institution. The Board approved plans for financing new Radiology facilities for both CT scans and MRIs and the acquisition of the Longitudinal Medical Record system from Partners Healthcare. The Board also approved the borrowing of $20 million through the Massachusetts Health and Education Facilities Authority Pool Loan Program to finance the renovation of MEEI's surgical facilities and other critical capital needs. The need for capital to keep our facilities and programs up to date and to invest in new programs is one of the MEEI's most pressing issues going forward. Despite the improved results of the past year, the demand for capital is much greater than we can finance internally and the MEEI must raise additional capital to be able to continue to invest in its future growth and expansion.

RESEARCH NEWS

MEEI's research program was active this year and the research funding portfolio remained quite diversified, reflecting the high caliber of creative and innovative scientific work being carried out by MEEI scientists and clinicians.

The following are some of the notable federal research grants received this year:

> Dr. Saumil Merchant and his colleagues, Drs. Adams, McKenna and Nadol, were awarded $3,068,662 by the NIH-NIDCD over a five-year period for a grant titled "Otopathology by Light Microscopy and Molecular Techniques."

> The National Institutes of Health, National Eye Institute (NEI) awarded a five-year grant of more than $2.4 million to Janey Wiggs, M.D., Ph.D., for her genetic work with open-angle glaucoma.

> The NEI awarded Jarema Malicki, Ph.D., a five-year grant of more than $1.7 million for his project on genetics and photoreceptor differentiation.

> Albert Edge, Ph.D., received a two-year grant of more than $600,000 from the NIDCD for his hair cell work.

> Dr. Richard Lewis received a grant of $962,000 over a three-year period from the NIH for research on vestibular influences on spatial orientation.

> Dr. Eric Holbrook received a KO8 grant (young investigator award) of $948,000 over a five-year period from the NIH for the enhancement of olfactory neuron survival.

Our researchers and postdoctoral fellows were generously supported by many foundations, including the Massachusetts Lions, Foundation Fighting Blindness, Knights Templar, Glaucoma Foundation, Research to Prevent Blindness, and the Deafness Research Foundation. We are most grateful for their support.

on the cutting edge

Why is the eye's cornea free of blood vessels? This medical puzzle, which has intrigued physicians and scientists for centuries, was solved by Dr. Reza Dana and a team of MEEI researchers and described in the July 25, 2006 issue of the *Proceedings of the National Academy of Sciences*. The researchers reported that there is an unexpected presence of large amounts of a protein, vascular endothelial growth factor receptor-3 (VEGFR-3), on the top epithelial layer of normal healthy corneas. They found that VEGFR-3 halts angiogenesis by acting as a "sink" to bind or neutralize the growth factors sent by the body to stimulate the growth of blood vessels. Not only does this critical discovery offer hope for preventing and curing blinding eye disease, this knowledge can be applied to other illnesses such as cancer.

caring for the community

The Massachusetts Eye and Ear Infirmary continued its commitment to providing service to the community through a variety of projects, including screenings, lectures and participation in health fairs. The hospital's Vision and Hearing Care Program cared for students at the Neighborhood House Charter School in Dorchester, Mass. In addition to these screenings, staff also provided eye exams and eyeglasses to adults in a literacy program in a new collaboration with Prevent Blindness Massachusetts. And finally, the Audiology Department's sixth annual "Have You Heard" seminar, organized by Sharon Kujawa, Ph.D., was a resounding success.

Above: Susan Mumby, a clinical fellow in Audiology, conducts a hearing screening at the Neighborhood House Charter School.

INFORMATION SERVICES

Information Services moved forward on a number of important initiatives this year. MEEI signed a contract with Partners Healthcare Systems to install their Clinical Data Repository and Longitudinal Medical Record, an outpatient record which will provide a significant leap in information access for our clinical practices. We also embarked on an evaluation of our "core systems" and are evaluating integrated vendor products to support our Surgery, Revenue Cycle, Supply Chain and Ancillary departments. This integrated Core System will facilitate seamless communications between departments and address regulatory, patient safety and compliance issues, all resulting in safer and better care. Information Services has developed an aggressive plan to upgrade the network environment and reconfigure our disaster recovery solution to provide a more stable and reliable computing infrastructure.

PLANNING FOR THE FUTURE

Fiscal year 2006 was a busy year with much planning for the hospital's future success. The Board engaged BDC Advisors to conduct a study and make recommendations to help MEEI expand its ambulatory outreach. We are in the progress of planning for future expansion of our satellites. In the meantime, ground has been broken on a 70,000-square-foot medical facility in East Bridgewater, owned by Compass Medical PC, that will bring the specialized services of MEEI's full-time ophthalmologists and otolaryngologists to southeastern Massachusetts.

IN MEMORIAM

I am saddened to note the passing of three MEEI Trustees and one former physician: Rufus L. Grason, Robert T.P. "Bob" Storer, Jr., John Larkin Thompson and

Dr. Charles Schepens, the founder of the MEEI's retina service. Mr. Grason, who died on Aug. 31, was a Trustee from 1991 to 2005. An expert in the field of acoustics, he was especially supportive of the Eaton-Peabody Laboratory. Mr. Storer, who died Sept. 22, was a Trustee for 33 years and served on the Board of Directors. He was a leader of MEEI capital campaigns and dedicated fundraiser for the Vision Rehabilitation Center. Mr. Thompson, who died on Sept. 23, became a Trustee in 1999 and was active on many committees. Dr. Schepens, esteemed colleague, pioneer retina surgeon, and founder and chairman emeritus of the institute that bears his name, passed away on March 28. Our thoughts and prayers go out to the friends and families of these dedicated individuals who will be missed.

IN CONCLUSION

This year was a year of transformation, a year of change, and of preparation for growth. We have made progress that will strengthen our position for years to come. We are exploring how we can bring more of our services to those who need them most. We have completed construction that will allow us to expand our clinical facilities to accommodate more physicians to attend to the growing number of patients. By building new labs and recruiting more scientists, we will continue to perform research that will lead to better treatments and cures. Our educational program was enriched so succeeding medical generations will inherit and enhance the knowledge passed on to them by our present staff. Their expertise, enthusiasm and dedication make MEEI the obvious choice for those who require new and unique treatment that we — and many times, only we — can provide. I am also pleased to announce the appointment of John Fernandez as the new president and CEO of MEEI. John is a great addition to the MEEI team, and I look forward to working with him for years to come.

Diane E. Kaneb

Diane E. Kaneb

Chair

on the cutting edge

The Vision Rehabilitation Center has one of New England's only Scanning Laser Ophthalmoscope Macular Perimeters. This unique tool produces a real time, high resolution image of a person's retina and identifies how areas of the retina are functioning. With this knowledge, the Vision Rehabilitation Center staff is better able to understand patients' symptoms and how patients use their vision and, if appropriate, can teach them to use alternate peripheral areas of the retina for optimal use of remaining vision.

report of the CHIEF OF OPHTHALMOLOGY

Ophthalmology has had a busy and productive year. We recruited more faculty, won awards, made discoveries, and launched a new publication. A number of wonderful donors have provided support that is allowing us to expand and grow.

CLINICAL PRACTICE AND STAFF

We are proud that our patients are assured of receiving the most advanced medical and surgical ophthalmic care available. Over the course of the year, nearly 117,000 patient encounters occurred, over 3,100 surgeries were performed, and 2,600 laser procedures were done. The financial results for clinical work in FY06 exceeded our budgeted surplus.

We are engaged in recruiting efforts to support growth in the department, and have added a number of new faculty members this year. In July, Dr. Dean Cestari joined the Neuro-Ophthalmology Service. Dr. Mary Lou Jackson became the new Director of the Vision Rehabilitation Service in September. Two of our graduating Fellows joined the clinical staff this fall through our clinician-scientist training program funded by the National Eye Institute and administered by Dr. Reza Dana: Dr. Ula Jurkunas in the Cornea Service and Dr. Lucia Sobrin in Retina and Immunology. Pediatric optometrist Dr. Kimberley Chan joined us in September and is seeing patients in Boston and at our Stoneham facility. Recruiting efforts continue with several promising candidates in discussions at present.

We also said goodbye to faculty who left to embrace exciting opportunities elsewhere; we wish them well. Dr. Dimitri Azar became Chairman of the Department of Ophthalmology at University of Illinois, Chicago Eye & Ear Infirmary and was joined by wife and pediatric ophthalmologist Dr. Nathalie Azar and by Dr. Sandeep Jain. Dr. Donald J. D'Amico assumed Chairmanship of the Department of Ophthalmology at Cornell/Weil Medical College, New York. Dr. Bonnie Henderson left academic medicine for local private practice. Dr. Reza Dana replaces Dr. D. Azar as Director of the Cornea/Refractive Surgery Service. Dr. Sherleen Chen has been named Acting Director of the Comprehensive Ophthalmology Service. Dr. Melanie Kazlas serves as acting Director of Pediatric Ophthalmology.

Keeping up with the best technology in clinical care is imperative in maintaining our scrupulous demand for best practices in ophthalmology. We were pleased, therefore, to be the first ophthalmology practice in the nation to acquire the newest FDA-approved LASIK technology, the Allegretto Wave Eye-Q. The Eye-Q system corrects vision more quickly than any previous instrument, permitting faster LASIK procedures. Dr. Roberto Pineda, II, Acting Director of

Refractive Surgery, spearheaded acquisition of the new technology.

RESEARCH

Our clinician-scientists and researchers continue to serve as leaders, to contribute to their clinical subspecialty fields, and to garner awards. New grant funding from industry, foundations, and federal institutions in 2006 totaled approximately $5.47 million. Clinical trial research is a growing area in our department, and funding awards were made to five efforts now underway in the department.

Last year we reported on the drug Macugen to treat age-related macular degeneration (AMD) and on the newest AMD drug, Lucentis. Lucentis, which was developed in conjunction with research in our Angiogenesis Laboratory, has now received approval from the U.S. Food and Drug Administration for patients with neovascular ("wet") AMD. Lucentis is the first drug that has led to vision improvement in a substantial number of these patients.

We are privileged to report some significant research findings from departmental clinician scientists. Dr. Cynthia Grosskreutz, Co-Director of the Glaucoma Service, has discovered that a molecule, calcineurin, causes cells in the retina to die and that blocking calcineurin's action prevents this cell death. Her publication on this topic won the Rudin Prize from the New York Academy of Science for the best publication on glaucoma this year. Research by Dr. Dana has solved another long-time mystery in ophthalmology — why the cornea remains clear. Understanding this phenomenon holds great promise in the search to prevent and cure blinding eye diseases.

Research institutions such as ours utilize patents and licensing strategies to protect our discoveries and enable their development into viable therapies. In a recent trial, a jury found in favor of MEEI in a case concerning Visudyne, a drug used in Photodynamic Therapy (PDT), the first effective treatment for wet AMD, developed through research at MEEI. The jury found for MEEI on claims of unjust enrichment and unfair trade practices against pharmaceutical company QLT Inc., the manufacturer of the drug.

Our staff garnered numerous awards this year. Dr. Evangelos Gragoudas, Chief, Retina Service, was selected as the 2006 winner of the Mildred Weisenfeld Award from the Association for Research in Vision and Ophthalmology (ARVO). I was honored to receive the 2006 ARVO/Pfizer Translational Research Award for work in elucidating the causes of and developing treatments for AMD. Researcher Dr. Dimitra Skondra was awarded a prestigious ARVO/Alcon Young Investigator Award. Dr. Thaddeus Dryja, Director of Eye Pathology, received the Hermann Wacker Prize at this year's joint meeting of The Retina Society and Club Jules Gonin. Dr. Eliot Berson, Director of the Berman-Gund Laboratory for the Study of Retinal Degenerations, was awarded the 2006 Ludwig von Sallmann Prize in Ophthalmology at the International Congress of Eye Research. Dr. Tiansen Li, also in the Berman-Gund Laboratory, was given a $10,000 Award of Merit by the Fight for Sight Nowak Family Grant program.

EDUCATION

The many friends and colleagues of Dr. Ephraim Friedman, Retina Service, joined together to endow the Ephraim Friedman, M.D. Lecture in Ophthalmology. The inaugural lecturer was Dr. Evangelos Gragoudas, a trainee and long-time colleague of Dr. Friedman. Colleagues and friends have also initiated an endowment to fund a professorship in Dr. Friedman's honor.

Dr. Friedman was further honored this year with the unveiling of his portrait, which now hangs in the corridor outside the Howe Library.

Dr. Friedman has made it possible for us to honor another well-respected senior clinician, Dr. Simmons Lessell. Dr. Friedman, an accomplished artist, sculpted a bust of Dr. Lessell, now proudly displayed in Meltzer Auditorium. Funding for this project was graciously provided in part by Trustee Carol Horowitz.

Dr. Claes Dohlman, a world leader in the field of cornea and external disease, was honored by the Cornea Society as the inaugural recipient of the Society's "Claes H. Dohlman Award for Excellence in Teaching and Education," which was established to acknowledge his unparalleled contribution to mentoring and teaching in the cornea subspecialty.

Special lectures and grand rounds continue to flourish. Among the guest lecturers this year were Dr. Nicholas Volpe, Scheie Eye Institute, Philadelphia; Dr. Harry Quigley, Wilmer Eye Institute, Maryland; Dr. Dan B. Jones, Cullen Eye Institute, Texas; and Dr. Jonathan Trobe, Kellogg Eye Center, Michigan. Our 2006 Annual Meeting featured Dr. Judah Folkman as the Mariana Mead Lecturer. Dr. Lessell and Dr. F.N. McCulley, Cullen Eye Institute, Texas, were recipients of Distinguished Alumni Awards. The "Neuro-Ophthalmology Fall Festival: Case Method and Evidence-Based Approach," a course organized and directed by Dr. Joseph F. Rizzo, was held this October after a long hiatus. The 2nd HMS Intensive Cataract Surgical Training Course was given to over 150 rising third year residents from across the United States. Our summer Lancaster Course successfully completed its 61st season.

Dr. Sandra Cremers and colleagues continue to develop their computer-based evaluation tools for assessing resident surgical skills. This program, HMS

on the cutting edge

Estimates show that up to half of U.S. women suffer from some level of female pelvic floor disorders (FPFD), a group of conditions that includes pelvic organ prolapse, urinary incontinence, and other sensory and emptying abnormalities of the lower urinary tract. Risk factors include childbirth and aging, yet little is known about the underlying molecular mechanism that causes the weakening of the pelvic support structures. Dr. Tiansen Li (above) and scientists in the Berman-Gund Laboratory for Retinal Degenerations came a step closer to understanding the cause of FPFD when they discovered that a failure to replenish elastic fibers in mice causes pelvic floor disorders like those found in humans. Their findings were published in the February 2006 issue of the *American Journal of Pathology*. The eye researchers happened upon this discovery serendipitously, which sometimes occurs in the study of gene functions. They are now back to studying the eye and have already gained interesting new insight into age-related macular degeneration.

ROCS, is now Web based and is being used by other academic institutions. The database for surgical evaluation contains over 2,500 surgical cases. Dr. John Loewenstein, now Associate Professor of Ophthalmology, has continued work with Dr. Bonnie Henderson on the Virtual Mentor computer simulation surgical training tool.

Finally, Dr. Joseph Rizzo and I are co-editors of a new publication, *Ophthalmology Rounds*. Funded by an educational grant from Genentech to Snell Communications, this publication features case-based presentations of relevant topics written by MEEI faculty in all areas of ophthalmology.

I cannot close my report without acknowledging the support and encouragement of the Board and Administration, the generous support from patients and friends, and our gratitude to our untiring staff. Our goals remain the same — unsurpassed clinical care, education, and research. Included in these are a desire to increase integration with community providers, to strengthen clinical and research faculty, and to utilize space and resources for optimal patient care service. We have made many strides toward fulfilling these goals this year. I look forward to another year of progress and growth.

Joan W. Miller

Joan W. Miller, M.D.
Chief of Ophthalmology

on the cutting edge

Glaucoma causes blindness by killing retinal ganglion cells, the cells that make up the optic nerve. The biggest risk factor for developing glaucoma is elevated intraocular pressure, but lowering the pressure alone does not always stop the progression of this disease. Research is underway to identify why the retinal ganglion cell dies and to find ways to stop this death. Dr. Cynthia Grosskreutz and a team of MEEI scientists discovered that the enzyme called calcineurin contributes to retinal ganglion cell death in animal models and used a drug to inhibit the death of these cells. Their findings, which give new hope for understanding and curing glaucoma, were published in the August 2005 *Proceedings of the National Academy of Sciences.*

Neurotologist Dr. Michael McKenna (right) is shown with operating room nurse Ronald McClelland, R.N. Dr. McKenna is on the team that developed MEEI's Auditory Brainstem Program (ABI), which is a collaboration between Ronald de Venecia, M.D., Ph.D., Christian Brown, Ph.D., and Donald Eddington, Ph.D. The ABI, a surgically implanted electrical device that provides input to the auditory system for people without functioning auditory nerves, has been FDA approved for those who have hearing loss as a result of Neurofibromatosis, Type II, offering hope to thousands with hearing loss. The ABI program is the first of its kind in the New England area.

report of the

CHIEF OF OTOLARYNGOLOGY

The mission of the Department of Otolaryngology is to provide the best possible care for patients with disorders that affect the ear, nose, throat, head and neck regions; to conduct clinical and basic research in an effort to improve that care in the future; to participate in the education and training of future health care and research professionals; and to disseminate health related information to the profession and to the general public. There was significant activity in all areas during fiscal year 2006.

PATIENT CARE, CLINICAL AND TRANSLATIONAL RESEARCH

The number of outpatient visits to physicians and the number of surgical procedures performed by our physicians increased in 2006, largely related to new recruitment to the professional staff.

General Otolaryngology Service

Under the direction of Dr. Gregory Randolph, the subspecialty areas of interest include the nose and paranasal sinuses, sleep apnea, and disorders of smell and taste. Drs. Salah Salman and Nicolas Bu-Saba were both recipients of the Honor Award from the American Academy of Otolaryngology-Head and Neck Surgery. Dr. Eric Holbrook successfully competed for an NIH K08 award for his research work in the olfactory system. Dr. Stacey Gray was instrumental in the development and implementation of a new teaching curriculum for residents in Otolaryngology.

Thyroid and Parathyroid Surgical Service

Under the direction of Dr. Greg Randolph, the service sponsored two successful CME courses, one on Surgery of the Thyroid and Parathyroid Glands in conjunction with the Department of Surgery at MGH, and the other on "Chernobyl: 20 Years After. What We Have Learned," in which Dr. Paul Konowitz served as a Co-Director.

Head and Neck Surgical Oncology Service

Under the direction of Dr. Daniel Deschler, Head and Neck Surgical Oncology continued its clinical, teaching and research mission in the management of head and neck neoplasia. Dr. Deschler was appointed Chairman-Elect of the Head and Neck Surgery Committee of the American Academy of Otolaryngology-Head and Neck Surgical Foundation. He also serves as the Director of the Norman Knight Hyperbaric Medicine Center, which this year saw the largest number of patients since its opening in 1995. Dr. Derrick Lin serves as the Co-Director of the Cranial Base Surgery Center of the MGH/MEEI and has a particular interest in the development of minimally invasive endoscopic techniques in skull base tumors. In addition to his ongoing investigation into the molecular basis of head and neck cancer, James Rocco, M.D., Ph.D., directs a Phase I trial of angiogenesis inhibitors in advanced head and neck cancer.

Laryngology Service and Voice and Speech Laboratory

Dr. Ramon Franco was appointed Director of the Laryngology Division. Dr. Phillip Song, who recently completed his fellowship training in Neurolaryngology in New York City, has also been appointed to the Division. The Voice and Speech Laboratory sponsored its second annual "Open House" for voice teachers and their students and its first seminar for singers.

Facial Plastic and Reconstructive Surgery Service

Dr. Mack Cheney was the recipient of the Clifford Barger Excellence in Mentoring Award from the Harvard Medical School. The Facial Nerve Center, under the direction of Dr. Tessa Hadlock, has recruited a physical therapist dedicated to facial nerve rehabilitation. Dr. Richard Gliklich serves as the principal investigator and senior editor for the Agency of Health Care Research and Quality (AHRQ) "Registries for Evaluating Patient Outcomes." Dr. Jessica Fewkes is planning for a state-of-the-art laser center to serve the subspecialty areas of dermatology, general otolaryngology, laryngology and plastic surgery.

Pediatric Otolaryngology Service

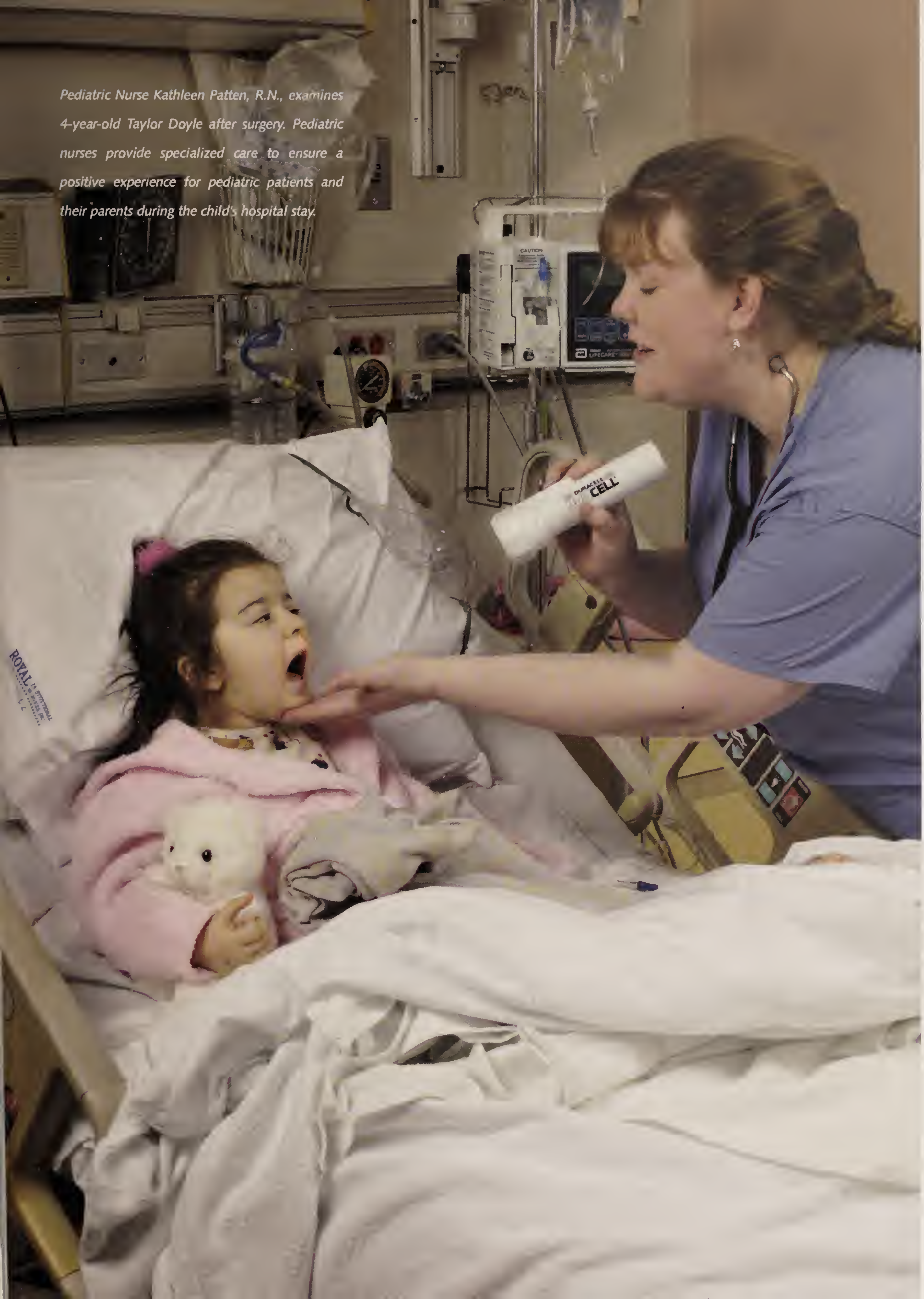
Under the direction of Dr. Roland Eavey, the surgical volume continues to increase and constitutes a very significant percentage of the Department's operative caseload. Dr. Leila Mankarious' research efforts are sponsored by an NIH K08 Award on airway development. Dr. Chris Hartnick has launched a very successful multidisciplinary Pediatric Airway, Voice, and Swallowing Clinic in conjunction with his colleagues at MGH. Dr. Eavey's research work in the area of molecular genetic analysis of hearing loss and microtia is done in allocation with Professor Jonathan Seidman of the Department of Genetics. Dr. Michael Cunningham serves as the President of the American Society of Pediatric Otolaryngology (ASPO) as well as serving as the Program Director for the Residency Training. Dr. Hartnick serves as our Director of the Clinical Fellowship in Pediatric Otolaryngology at MEEI.

Otology, Neurotology, Audiology, Cochlear Implant Research Laboratory, and Vestibular Laboratory

Clinical members of the Otology/Neurotology Service have developed subspecialty interests and strengths. Dr. Saumil Merchant collaborates with Dr. John Rosowski in basic and translational research in the mechanics of the middle ear. He also helps to manage the National Temporal Bone Registry based at MEEI. Dr. Steven Rauch is principal investigator of a multi-institutional, NIH-sponsored study of the management of sudden hearing loss, and also collaborates with members of the Vestibular Laboratory. I continued my work related to the pathology of the inner ear, and in conjunction with other members of the Department, am involved in the production of a revised third edition of Schuknecht's classic text, *Pathology of the Ear*. Dr. Michael McKenna studies the molecular biology of otosclerosis, and in conjunction with Drs. Kujawa and Sewell and the Draper Laboratories, is helping to develop a drug-delivery system for the inner ear. Dr. Ron de Venecia has a special interest in both clinical and translational research in the area of auditory brainstem implants for deaf patients who cannot benefit from conventional cochlear implants. The Cochlear Implant Research Laboratory, directed by Dr. Don Eddington, is concentrating on identification of peripheral anatomic factors that influence the pattern of auditory nerve activity elicited by intracochlear stimulation.

Dr. Conrad Wall collaborates with Dr. Marc Weinberg of the Draper Laboratory, and both were honored for their work in an effort to develop prostheses for patients with balance disorders. Dr. Daniel Merfeld was awarded an NIDCD R01 grant to investigate the cues the brain uses to distinguish tilt from translational movements. Dr. Richard Lewis was awarded a grant to study the vestibular influences on spatial orientation.

The Department of Audiology, directed by Sharon Kujawa, Ph.D., has significantly increased its services and now performs newborn hearing screening in four area hospitals. Infants identified by this screening



Pediatric Nurse Kathleen Patten, R.N., examines 4-year-old Taylor Doyle after surgery. Pediatric nurses provide specialized care to ensure a positive experience for pediatric patients and their parents during the child's hospital stay.

on the cutting edge

In light of evidence suggesting detrimental health effects of trans fats, the cafeteria switched to new frying oil that contains no trans fats in 2006. Evidence suggests that consumption of trans fat raises LDL (bad cholesterol) levels and lowers HDL (good cholesterol) levels, increasing the risk of developing heart disease and stroke. MEEI strives daily to provide the most beneficial environment possible to patients, employees and others who visit our facility. This change is just one way to remain true to our mission as a healthcare institution.

receive comprehensive follow-up at MEEI and rehabilitative efforts through the MEEI's Auditory Rehabilitation, Hearing Aid, and Cochlear Implant Centers. Audiology staff has been successful in achieving grant support for their work. Chris Halpin is a co-investigator in an NIDCD multi-center trial with Dr. Steven Rauch. Barbara Herrmann, Ph.D., collaborates with Don Eddington, Ph.D., in an effort to improve the function of cochlear implants. Dr. Kujawa, Charlie Liberman, Ph.D., and Albert Edge, Ph.D., are collaborating on basic and clinical studies of noise-induced and age-related hearing.

BASIC RESEARCH

During the year there were several noteworthy accomplishments by our research faculty:

- Dr. Albert Edge will soon publish in *Molecular and Cellular Neuroscience* that stem cells derived from bone marrow can be induced to differentiate into both hair cells and neurons in vitro.
- Dr. Charles Liberman will publish soon in *Nature and Neuroscience* that loss of feedback neuronal control of the inner ear leads to loss of intraural balance in neuronal excitability, important for sound localization.
- In a collaborative effort involving Drs. McKenna, Merchant, Adams, Kujawa, and Stankovic, the inner ear has been found to contain a transcriptional factor called osteoprotegerin, which is a potent inhibitor of bone remodeling in the ear.

NEW GRANTS

Despite a tight Federal budget, Eaton-Peabody Laboratory investigators obtained several new grants to pursue research into the mechanisms of hearing and deafness.

- A three-year grant from NIDCD to Drs. John Rosowski and Saumil Merchant to work with collaborators at Worcester Polytechnic Institute in the development of computer controlled laser holography methodology to measure motion of the eardrum.
- A five-year grant from NIDCD to Dr. William Sewell to study the regulation of synaptic receptors on nerve terminals in the inner ear, which we hope will help explain the disorders of hearing loss such as seen in trauma, tinnitus, and Meniere's syndrome.
- A two-year grant from the American Tinnitus Association to Dr. Jennifer Melcher to study functional MRI patterns in tinnitus patients.
- A major philanthropic gift from the Wilson family to support a group of collaborators, including Drs. C. Brown, R. de Venecia, M. McKenna and D. Eddington, in the area of auditory brainstem implantation.

AWARDS AND HONORS

- Fuxin Shi, Ph.D., postdoctoral fellow working with Dr. Albert Edge, was awarded "the best presentation" at the 2005 Annual Meeting of the Harvard Stem Cell Institute for her poster.
- Dr. Jocelyn Songer, a recent Ph.D. graduate working under the mentorship of Dr. John Rosowski, won the "best poster" award at the 4th International meeting for Middle Ear Mechanics in Research and Oto-Surgery.
- Dr. Ken Hancock, a junior scientist working with Dr. Bertrand Delgutte, received the prestigious Shore Fellowship from the Harvard Medical School, in support of his study of neuronal circuitry of sound localization.
- Dr. Rodrigo Martinez-Monedero, working in Dr. Edge's laboratory, was awarded a grant from the National Organization for Hearing Research for study of the molecular guidance cues in regeneration.
- Dr. Sang-Jun Jeon, working in Dr. Edge's laboratory, received a grant from the Harvard Center for Neurodegeneration and Repair to perform a screen from a library of compounds that may assist in transforming stem cells to auditory hair cells.

EDUCATIONAL MISSION

This year saw several successful courses and symposia, with topics ranging from endoscopic surgery of the sinus to the Chernobyl Thyroid Cancer Convocation. The Department hosted 18 research fellows and 23 visiting colleagues from 13 countries.

PROFESSIONAL STAFF

Congratulations are in order for the promotion of Drs. Michael McKenna and Mack L. Cheney to the rank of Professor of Otology and Laryngology at the Harvard Medical School. We welcome several new members of the medical staff, Drs. Thomas Costello, Vijay Nayak and Dr. Richard Gacek to the non-hospital based staff; and Drs. Phillip Song, Ron de Venecia, and Michael Rho to the hospital-based staff.

The Department is grateful to its patients, staff and to the MEEI Board of Directors for their confidence, help and support in making this a successful year.

Joseph B. Nadol, Jr.

Joseph B. Nadol, Jr., M.D.
Chief of Otolaryngology

on the cutting edge

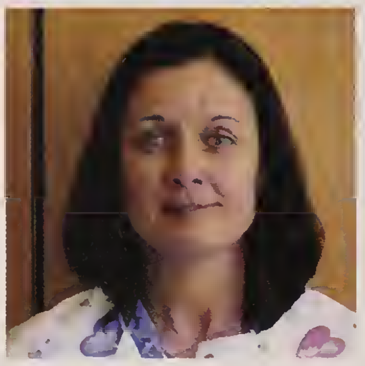
MEEI scientists have been working on ways to replace hair cells and neurons whose loss is responsible for the most common forms of deafness. Dr. Albert Edge and his team recently showed that stem cells in bone marrow can be turned into hair cells in the laboratory, a discovery that could someday be used in treatments for hearing loss. If such treatments are successful in experiments being carried out currently, bone marrow cells could be collected from individual patients and implanted in the ear to replace lost hair cells or neurons. This work was published in the November 2006 issue of *Molecular and Cellular Neuroscience.*

employee stars

JANUARY

Robert O'Mara
Research

FEBRUARY



Ann McDermott
Radiology

MARCH

Theresa Labrecque
Clinical Lab

APRIL

Patricia Venezia
Central Registration

MAY

Elissa Hatton
Social Work

JUNE

Douglas Wiedeman*
Pharmacy

JULY

Ann Tirrell
Pediatric ENT

AUGUST

Kristen Kirk-Paladino
Research Administration

SEPTEMBER

Larisa Gelfand
Cornea Service

OCTOBER

Maureen Bouvier
Central Registration

NOVEMBER

Paula George
Ophthalmic Education

DECEMBER

Mary Costigan
Otolaryngology

**It is with sadness that we acknowledge the death of Doug Wiedeman, which occurred shortly following the date of this award.*

2006 ANNUAL REPORT
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John Fernandez, President and CEO
Bruce Jordan, Vice President of Development and Public Affairs
Mary E. Leach, Director of Public Affairs

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financial statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. - Combined Balance Sheet as of September 30, 2006

ASSETS

Current Assets

Cash and Cash Equivalents	2,984,083
Short-term investments	1,159,358
Assets Whose Use is Limited Under Indenture Agreement (Required for Current Liabilities)	1,352,729
Patient Accounts Receivable (Less Allowance for Doubtful Accounts $3,348,332)	13,224,460
Other Current Assets	7,402,282
Total Current Assets	**26,122,912**

Assets Whose Use Is Limited

Construction Fund	4,618,937
Special Cash Reserves	11,427,518
Funds Held for Research	4,504
Under Indenture Agreement	4,501,956
Total Assets Whose Use is Limited	**20,552,915**

Investments	97,975,513
Pledges Receivable, Net	2,856,507
Remainder Interest in Charitable Trusts	2,496,330
Beneficial Interest in Trusts	16,431,134
Property, Plant & Equipment (Net of Depreciation of $155,253,426)	74,337,476

Other Assets

Intangible Assets (Net of Amortization of $1,281,077)	370,612
Deposits	1,019,500
Total Assets	**242,162,899**

LIABILITIES AND NET ASSETS

Current Liabilities

Current Portion of Long-Term Debt and Capital Leases	4,577,608
Accounts Payable and Accrued Expenses	23,156,091
Accrued Interest	303,745
Estimated Third Party Settlements	3,168,524
Total Current Liabilities	**31,205,968**

Long-Term Debt, Less Current Portion	31,173,852
Asset retirement obligation	562,927
Accumulated Post-Retirement Benefit Obligation	325,862
Professional Liability Reserve	1,341,186
Accrued Pension Costs	4,909,722
Annuities and Unitrusts Payable	1,059,954
Total Liabilities	**70,579,471**

Net Assets

Unrestricted for General Operations	44,004,486
Board Designated	33,876,090
Total Unrestricted Net Assets	**77,880,576**
Temporarily Restricted	46,553,916
Permanently Restricted	47,148,936
Total Net Assets	**171,583,428**

Total Liabilities and Net Assets	**242,162,899**

financial statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. - Combined Statement of Revenue and Expense of the General Funds as of September 30, 2006

NET PATIENT REVENUE	
Net Patient Service Revenue	121,190,610
OTHER OPERATING REVENUE	
(Including $23,359,464 from Research, Contributions and Grants)	47,828,835
Total Operating Revenue	**169,019,445**

generous friend honors tomorrow's leaders

Drs. Douglas Rhee (glaucoma) and Phillip Song (laryngology) received the second annual Norman Knight Leadership Development Award. Made possible by Norman Knight, a steadfast friend of the Massachusetts Eye and Ear Infirmary, this award is given each year to junior physicians selected for their exceptional promise as medical leaders of the future. Pictured above are Drs. Rhee and Song.

OPERATING EXPENSES	
Patient Care and Clinical	102,843,603
General and Administrative	37,921,103
Research	24,640,940
Fundraising	1,289,502
Education	2,161,588
Total Operating Expenses	**168,856,736**
Gain from Operations	162,709
Other Gains	3,176,413
Excess of Revenues Over Expenses	3,339,122
Other Support	1,125,037
Subtotal Increase in Unrestricted Net Assets	**4,464,159**
Adjustment for Minimum Pension Liability	2,814,746
Cumulative effect of change in accounting principle	(543,613)
Increase in Unrestricted Net Assets	**6,735,292**
In addition, the Foundation received the following restricted funds income: Gifts and Bequests	6,799,750
INVESTMENT INCOME:	
Interest and Dividends	(631,600)
Realized Gains on Investments	7,450,654
Unrealized Losses on Investments	(551,881)
Gain on Beneficial Interest in Trusts	530,813

A copy of the audited financial statements is available upon request from the Office of Public Affairs, (617) 573-3340.

2006 statistics

Inpatient Hospital: 42 beds

DISCHARGES:

Eye Discharges	272
ENT Discharges	965
Total	**1,237**
Patient Days	4,408
Average Length of Stay	3.56

Surgical Procedures

INPATIENT SURGERY:

Eye Cases	219
ENT Cases	808
Total	**1,027**

AMBULATORY SURGERY:

Eye Cases	12,298
ENT Cases	6,584
Total	**18,882**
Total Surgical Procedures	**19,909**
Ambulatory Surgical Cases Utilizing Observation Service	2,854

Outpatient Department

OPHTHALMOLOGY:

Comprehensive Ophthalmology	23,511
Glaucoma	20,066
Cornea	10,915
Retina	22,457
Immunology	2,773
Neuro-Ophthalmology	4,117
Pediatric Ophthalmology and Strabismus	3,696
Eye Plastic	4,381
Electroretinography	5,133
Vision Rehabilitation	2,242
Contact Lens	4,646
Methuen Center	803
Stoneham Center	2,078
Total	**106,818**

OTOLARYNGOLOGY:

Infirmary	62,173
Stoneham Center	11,704
Quincy Center	15,872
Wellesley Center	9,931
Total	99,680
Total Outpatient Visits	**206,498**

Emergency Room

Total Visits	21,754

Special Services

AUDIOLOGY DEPARTMENT:

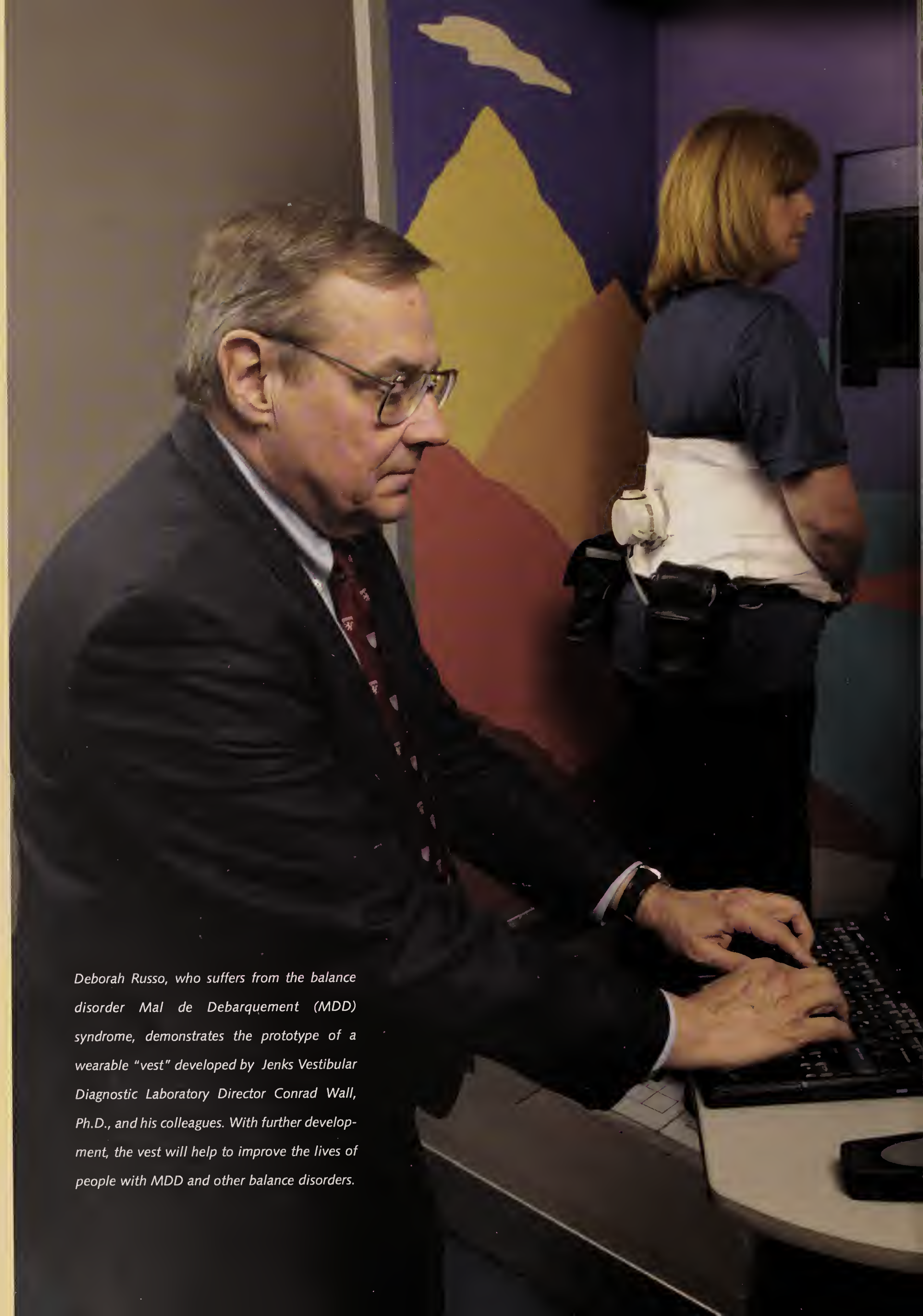
Outpatient Visits	14,684
Hearing Aid Center	3,188
Evoked Response	1,199
Newborn Audiology Screenings	3,384

RADIOLOGY DEPARTMENT:

Conventional Exams	2,797
CT Scan	9,825
MRI	3,151

LABORATORIES:

Bacteriology (Cultures)	9,875
Clinical Lab (Procedures)	56,180
ENT Pathology (Specimens)	15,096
Eye Pathology (Specimens)	2,859
Frozen Section Laboratory	2,362
Electrocardiograms	3,650
Fluorescein Angiography	10,397
Occupational Therapy	1,723
Optical Shop	2,672
Ultrasonography	7,716
Vestibular Laboratory	5,900
Voice and Speech Laboratory	12,660
Hyperbaric Oxygen Treatments	3,336



Deborah Russo, who suffers from the balance disorder Mal de Debarquement (MDD) syndrome, demonstrates the prototype of a wearable "vest" developed by Jenks Vestibular Diagnostic Laboratory Director Conrad Wall, Ph.D., and his colleagues. With further development, the vest will help to improve the lives of people with MDD and other balance disorders.

medical staff

Department of Anesthesiology

Chief of Anesthesiology

Salvatore J. Basta, M.D.

Clinical Director

Joseph Bayes, M.D.

Director of SurgiCenter Anesthesia

Artem Grushm, M.D.

Director, Pediatric Anesthesia

Xiangwei (Shannon) Zhang, M.D.

Anesthesiologists

Malcolm J. Heslop, M.D.
Jin W. Kim, M.D.
Nancy L. Gessner, M.D.
Janine T. Rodrigues-Saldanha, M.D.

Associate Anesthesiologists

Brian D. Blondin, M.D.
Rebecca J. Leong, M.D.
Ilya Malikin, M.D.
Anthony M. Sordillo, M.D.
Lily G. Tabbal, M.D.
Gabriele F. Troll, M.D.

Assistant Anesthesiologists

Maria M. Bortkiewicz, M.D.
Corey E. Collins, M.D.
Bil L. Ragan, M.D.
Sergei E. Razov, M.D.

Medical Unit

Medical Unit Director

Robert Hughes, M.D.

Medical Unit Staff

Andrew Chan, M.D.
Cynthia Cooper, M.D.
Carol Ehrlich, M.D.
Brendan Everett, M.D.
Orlando Gutierrez, M.D.
Yariv Houvras, M.D.
Nancy Kim, M.D.
Herbert Lin, M.D.
Preeti Mehta, M.D.
Siddhartha Mukherjee, M.D.
Jonathan Passeri, M.D.
Joel Pekow, M.D.
Allan Pineda, M.D.
Elizabeth Speliotes, M.D.
Jatin Vyas, M.D.
Matthew Weiss, M.D.
Richard White, M.D.
Ramnik Xavier, M.D.
Patrick Yachimski, M.D.

Department of Ophthalmology

Chief of Ophthalmology

Joan W. Miller, M.D.

Associate Chiefs of Ophthalmology

Dimitri Azar, M.D.
(Until March 30, 2006)
Donald D'Amico, M.D.
(Until October 31, 2006)
John I. Loewenstein, M.D.

ACTIVE STAFF

Surgeons in Ophthalmology

Ann M. Bajart, M.D.
Eliot L. Berson, M.D.
Gary E. Borodic, M.D.
Robert J. Brockhurst, M.D.
Sheldon M. Buzney, M.D.
Romeo K. Chang, M.D.
Eugene C. Ciccarelli, M.D.
Claes H. Dohlman, M.D.
Thaddeus P. Dryja, M.D.
Elliot M. Finkelstein, M.D.
Richard P. Floyd, M.D.
C. Stephen Foster, M.D.
Anthony J. Fraioli, M.D.
Alexander R. Gaudio, M.D.
Evangelos S. Gragoudas, M.D.
Arthur S. Grove, M.D.
Tatsuo Hirose, M.D.
Mark S. Hughes, M.D.
Mohandas M. Kini, M.D., Ph.D.
Arnold J. Kroll, M.D.
Deborah Pavan Langston, M.D.
Simmons Lessell, M.D.
John I. Loewenstein, M.D.
Peter L. Lou, M.D.
Robert A. Lytle, M.D.
Joan W. Miller, M.D.
Shizuo Mukai, M.D.
Michael K. Pinnolis, M.D.
Ronald C. Pruett, M.D.
Joseph F. Rizzo III, M.D.
Peter A. Rubin, M.D.
Edward A. Ryan, M.D.
Delia N. Sang, M.D.
Johanna M. Seddon, M.D.
Francis Sutula, M.D.
Jonathan H. Talamo, M.D.
Daniel J. Townsend, M.D.
David S. Walton, M.D.
John J. Weiter, M.D., Ph.D.
Michael S. Wiedman, M.D.
Lucy H. Y. Young, M.D., Ph.D.

Associate Surgeons

Maida P. Antigua, M.D.
Paul Arrigg, M.D.
Jorge G. Arroyo, M.D.
Kathryn A. Colby, M.D., Ph.D.
Reza Dana, M.D., M. Sc., MPH
Andrew J. Gillies, M.D.
Edward F. Goodman, M.D.
Cynthia L. Grosskreutz, M.D., Ph.D.
Bonnie An Henderson, M.D.
Kevin J. Kaufman, M.D., Ph.D.
Mark A. Latina, M.D.
David G. Lotufo, M.D.
Louis R. Pasquale, M.D.
David G. Perkins, M.D.
Roberto Pineda II, M.D.
Francis Sutula, M.D.
David M. Tracy, M.D.
Susan Wong, M.D.

Assistant Surgeons

Sherleen H. Chen, M.D.
Teresa C. Chen, M.D.
Sandra L. Cremers, M.D.
Mark P. Dacey, M.D.
Elizabeth Daher, M.D.
Aaron M. Fay, M.D.
Macie Finkelstein, M.D.
Bradley S. Foster, M.D.
David Greenseid, M.D.
Mami A. Iwamoto, M.D.
Robert T. Lacey, M.D.
Richard Low, M.D.
Mei L. Mellott, M.D.
Douglas Rhee, M.D.
Neal G. Snebold, M.D.
William G. Stinson, M.D.
Jeffrey L. Taveras, M.D.
Richard S. Weinhaus, M.D.
Janey Lee Wiggs, M.D., Ph.D.

Assistants in Ophthalmology

Adam Beck, M.D.
Dean M. Cestari, M.D.
Linda R. Dagi, M.D.
Matthew Gardiner, M.D.
Debra Lynn Halpern, M.D.
Jo-Ann E. Haney-Tilton, M.D.
Mark P. Hatton, M.D.
Janie Ho, M.D.
David Hunter, M.D., Ph.D.
Mary Lou Jackson, M.D.
Ula V. Jurkunas, M.D.
Murat Kalayoglu, M.D., Ph.D.
Melanie Kazlas, M.D.
Ivana Kim, M.D.
Carolyn Kloek, M.D.
Magdalena Krzystolik, M.D.
Daniel Laby, M.D.
Kameran Lashkari, M.D.
Raymond Magauran, M.D.
John Mandeville, M.D.
Mary Jane McCarron, M.D.
Margaret McLaughlin, M.D.
Samir Melki, M.D.
George Papaliodis, M.D.
Steven Rhee, M.D.
Tina Scheufele, M.D.
Lucia Sobrin, M.D.
Steven Stetson, M.D.
Jennifer Sun, M.D.
Nigel Timothy, M.D.
Carolyn Wu, M.D.

ASSOCIATE STAFF

Surgeons

Stephen J. Fricker, M.D.
James R. Lee, M.D.
Felipe I. Tolentino, M.D.
Clement L. Trempe, M.D.

Assistant Surgeons

David Z. Greenseid, M.D.
Ernest Kornmehl, M.D.
Steven M. Patalano, M.D.
Vincent J. Patalano II, M.D.
Donald W. Putnoi, M.D

Assistants in Ophthalmology

Frederick C. Armbruster, M.D.
Eugenio Candal, M.D.
Robert J. D'Amato, M.D., Ph.D.
David E. Eisenberg, M.D.
C. Douglas Evans, M.D.
Laura Fine, M.D.
Bradley Foster, M.D.
Ioannis Glavas, M.D.
Gerri Goodman, M.D.
Bruce J. Gillers, M.D.
Neil Gross, M.D.
Jeffrey Heier, M.D.
James Hung, M.D.
Debra Kroll, M.D.
M. Lisa McHam, M.D.

Mahnaz Nouri, M.D.
Peter Rapoza, M.D.
Claudia U. Richter, M.D.
Ramy Rizkalla, M.D.
Thomas C. Smith, M.D.
Mitchell Strominger, MD
Paul J. Wasson, M.D.
Lawrence E. Weene, M.D.
David Yi, M.D.

COURTESY STAFF

Surgeons

A. Robert Bellows, M.D.
Albert R. Frederick Jr., M.D.
Richard Dallow, M.D.
Robert A. Gorn, M.D.
B. Thomas Hutchinson, M.D.
Kenneth R. Kenyon, M.D.
J. Wallace McMeel, M.D.
Bradford Shingleton, M.D.

Associate Surgeons

Frank G. Berson, M.D.
Michael Chang, M.D.
Ralph H. Hinckley, M.D.
Brent Lambert, M.D.
Howard Marton, M.D.
Robert A. Petersen, M.D.
James W. Rosenberg, M.D.
Perry Rosenthal, M.D.
Trexler Topping, M.D.
Clement Trempe, M.D.

Assistant Surgeons

Mark B. Abelson, M.D.
Claudia A. Arrigg, M.D.
Richard H. Feit, M.D.
Jeffrey P. Gilbard, M.D.
Evan B. Gold, M.D.
Paul L. Gunderson, M.D.
Jay Kaufman, M.D.
Ernst J. Meyer, M.D.
Jill A. Smith, M.D.
Richard Weinhaus, M.D.

Assistants in Ophthalmology

Caroline Baumal, M.D.
Paul E. Beade, M.D.
Stephen Belmonte, M.D.
Michael J. Bradbury, M.D.
Joseph F. Burke, M.D.
Cindy W. Chao, M.D.
John B. Constantine, M.D
Jay S. Duker, M.D.
Deborah S. Eappen, M.D.
Bishara Faris, M.D.
Edward Feinberg, M.D.
George T. Frangieh, M.D.
Nicoletta Fynn-Thompson, M.D.
Jeffrey Gallo, M.D.
David S. Gendelman, M.D.
Jason Gilbert, M.D.
Deborah Jacobs, M.D.
Nabil I. Jarudi, M.D.
Eddie Kadrmas, M.D.
Vicki Kvedar, M.D.
Marc Leibole, M.D.
Joseph J. Levy, M.D.
Shelley G. McKee, M.D.
Mehul C. Mehta, M.D.
Clifford M. Michaelson, M.D.
Michael G. Morley, M.D.
Timothy J. Murtha, M.D.
Kambiz Neghaban, M.D.
Steven A. Nielsen, M.D.
Dale Oates, M.D.
Michael J. Price, M.D.
Michael B. Raizman, M.D.
Lawrence I. Rand, M.D.
Elias Reichel, M.D.
Martin Richler, M.D.
Jason Rothman, M.D.
William M. Tang, M.D.
Kailenn Tsao, M.D
Deborah Schlossman, M.D.
Sabera T. Shah, M.D.
Sarkis H. Soukiasian, M.D.
Ernest A. Sutcliffe, M.D.
Gerald Tanguilig, M.D.
John V. Thomas, M.D.
Stewart J. Turner, M.D.
James Umlas, M.D.
Kuldip K. Vaid, M.D.
George A. Violin, M.D.
Lawrence Weene, M.D.
Stephen A. Youngwirth, M.D.
Deborah E. Zuckerman, M.D.

EMERITUS STAFF

Surgeons

Jack F. Bowers, M.D.
Harry Braconier, M.D.
George Garcia, M.D.
John R. Gehring, M.D.
Eeva-Liisa Martola, M.D.
George Olive, M.D.
John G. Sebestyen, M.D.
Richard J. Simmons, M.D.

Associate Surgeons

Philip J. Harris, M.D.
Roland Houle, M.D.
David Hutchison, M.D.

Assistant Surgeons

Robert Kinder, M.D.
Peter B. Mooney, M.D.

Assistants in Ophthalmology

Chester J. Boulris, M.D.
Firmon E. Hardenbergh, M.D.
Bernard Schwartz, M.D., Ph.D.

HONORARY STAFF

Senior Honorary Surgeon

Irving L. Pavlo, M.D.

Surgeons

Ephraim Friedman, M.D.
Alfred W. Scott, M.D.

Associate Surgeons

John M. Carroll, M.D.
Paul F. Vinger, M.D.

Assistants in Ophthalmology

Robert B. Cook, M.D.

CONSULTING STAFF

Associate Surgeons

Lloyd M. Aiello, M.D.
Richard Robb, M.D.

Assistant Surgeon

David Miller, M.D.

ASSISTANT STAFF

Assistants in Ophthalmology

Sarah Acevedo-Roman, M.D.
Calliope Allen, M.D.
Christopher Andreoli, M.D.
Fina Barouch, M.D.
Stacey Brauner, M.D.
Audrey Chan, M.D.
Susie Chang, M.D.
Marc Dinkin, M.D.
Pankaj Gupta, M.D.
Mona Harissi-Dagher, M.D.
Pedram Hamrah, M.D.
David Hinkle, M.D.
James Kirszrot, M.D.
Szilard Kiss, M.D.
Thomas Patrianakos, D.O.
Navin Prasad, M.D.
Ying Qian, M.D.
David Rubaltelli, M.D.
Michael Rubin, M.D.
Johnny Tang, M.D.
Demetrios Vavvas, M.D.

Residents

Ednan Ahmed, M.D.
Audrey Ahuero, M.D.
Jessica Ciralsky, M.D.
Khayyam Durrani, M.D.
Knut Eichhorn-Mulligan, M.D.
Hani Salehi-Had, M.D.
Gena Heidary, M.D.
Ben Kim, M.D.
Nancy Kim, M.D., Ph.D.
Yannek Leiderman, M.D.
Ann-Marie Lobo, M.D.
Sandra Montezuma, M.D.
Sophia Pachydaki, M.D.
Vassiliki Poulaki, M.D., Ph.D.
Erin Salcone, M.D.
Aaron Savar, M.D.
Ankoor Shah, M.D.
Rebecca Stacy, M.D.
Tasha Tanhehco, M.D.
Aisha Traish, M.D.
Angela Turalba, M.D.
Scott Warden, M.D.
Raymond Wee, M.D.
Corey Westerfeld, M.D.

Research Fellows

Elena Albe, M.D.
Lama Amulki, M.D.
Navneet Brar, M.D.
Jinghua Chen, M.D.
Dayse de Sena, M.D.
B.J. Fan, Ph.D.
Yan Guo, M.D.
Toshio Hisatomi, M.D., Ph.D.
Seong-Joon Kim, M.D.
Shinsuke Miyahara, Ph.D.
Shintaro Nakao, M.D., Ph.D.
Huy Tu Nguyen, M.D.
Kousuke Noda, M.D., Ph.D.
Mika Noda, M.D.
Grace Ooi, M.D.
Ana Maria Passerotti, M.D.
Kanchan Ramchand, Ph.D.
Haicheng She, M.D., Ph.D.
Miyahara Shinsuke, M.D.
Sureka Thiagalingam, M.D.
Kayoung Yi, M.D., Ph.D.
Hyeong Yu, M.D.
Tian Yi Zhang, M.D.
Chengtian Zhao, Ph.D.

Research Associate

Basil Pawlyk

OPHTHALMOLOGY SERVICE DIRECTORS

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Cornea and Keratorefractive Service

Reza Dana, M.D., M. Sc., MPH, Director

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Electroretinography Service

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Eye Emergency Department

Matthew Gardiner, M.D., Director

Eye Plastics and Orbital Surgery Service

Aaron M. Fay, M.D., Acting Director

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Cynthia L. Grosskreutz, M.D., Ph.D., Co-Director
Louis R. Pasquale, M.D., Co-Director

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George Papaliodis, M.D., Acting Director

Macular Degeneration Unit

Joan W. Miller, M.D., Director

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Evangelos S. Gragoudas, M.D., Director

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Roberto Pineda II, M.D., Director

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John I. Loewenstein, M.D., Director

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Evangelos S. Gragoudas, M.D., Director

Eye Trauma Service

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Eye Virology Service

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Mary Lou Jackson, M.D., Director

RESEARCH LABORATORIES

Berman-Gund Laboratory for the Study of Retinal Degenerations

Eliot L. Berson, M.D., Director

Robert J. Brockhurst, M.D.

Alexander R. Gaudio, M.D.

Michael A. Sandberg, Ph.D.

Tiansen Li, Ph.D.

Howe Laboratory of Ophthalmology

Meredithe L. Applebury, Ph.D.

Cynthia L. Grosskreutz, M.D., Ph.D.

Clint Makino, Ph.D.

Jarema Malicki, Ph.D.

Louis R. Pasquale, M.D.

Francesca Pignoni, Ph.D.

Douglas Rhee, M.D.

Janey L. Wiggs, M.D., Ph.D

Lucy H.Y. Young, M.D., Ph.D.

Angiogenesis Laboratory

Joan W. Miller, M.D., Director

Evangelos Gragoudas, M.D.

Ali Hafezi-Moghadam, M.D., Ph.D.

Ivana Kim, M.D.

Ocular Molecular Genetics Institute

Margaret DeAngelis, Ph.D.

Retina Research Institute

Evangelos S. Gragoudas, M.D., Co-Director

Joan W. Miller, M.D., Co-Director

RESEARCH APPOINTMENTS

(in addition to clinician scientists listed above)

Research Associates

Dimitriy Alexeev, Ph.D.

Meredithe L. Applebury, Ph.D.

Oleg Bulgakov, Ph.D.

Margaret DeAngelis, Ph.D.

Ceron Ergorul, Ph.D.

Quanhua He, Ph.D.

Xiatang Jing, Ph.D.

Xiaoquin Liu, Ph.D.

Clint L. Makino, Ph.D.

Jarema Malicki, Ph.D.

Mark Melhorn

Yoshihiro Omori, Ph.D.

Francesca Pignoni, Ph.D.

Michael A. Sandberg, Ph.D.

Xun Sun, Ph.D.

Yajie Wang, Ph.D.

Xiao-Hong Wen, Ph.D.

Jun Yang, Ph.D.

Hongwei Zhang, Ph.D.

Department of Otolaryngology

ACTIVE STAFF

Chief of Otolaryngology

Joseph B. Nadol, Jr., M.D.

Surgeons

Barry J. Benjamin, M.D.

Yale J. Berry, M.D.

Jeffrey S. Brown, M.D.

Nicolas Y. BuSaba, M.D.

Mack L. Cheney, M.D.

Michael J. Cunningham, M.D.

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Salah D. Salman, M.D.

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Steven M. Zeitels, M.D.

Associate Surgeons

Samir M. Bhatt, M.D.

David M. Bowling, M.D.

Jean M. Bruch, M.D.

Victor Calcaterra, M.D.

Daniel G. Deschler, M.D.

Ramon A. Franco, M.D.

George Kazda, M.D.

David A. Kieff, M.D.

Charles M. Norris, M.D.

James A. Rocco, M.D., Ph.D.

Mark F. Rounds, M.D.

Mark S. Volk, M.D.

Associate Neurologist

Stephen W. Parker, M.D.

Assistant Surgeons

Sherif M. Ammar, M.D.

K. Holly Gallivan, M.D.

Alex Grilli, M.D.

Theresa A. Hadlock, M.D.

Christopher J. Hartnick, M.D.

Eric H. Holbrook, M.D.

Ralph A. Iannuzzi, M.D.

John B. Lazor, M.D.

Eric H. Stein, M.D.

Assistants in Otolaryngology

Ronald K. de Venecia, M.D., Ph.D.

Stacey T. Gray, M.D.

Maynard C. Hansen, M.D.

Donald G. Keamy, Jr., M.D.

Derrick T. Lin, M.D.

Michael B. Rho, M.D.

Jennifer L. Smullen, M.D.

Phillip C. Song, M.D.

Pathologist

Ben Z. Pilch, M.D.

Assistant Pathologist

William Faquin, M.D.

Artur Zembowicz, M.D.

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Jessica Fewkes, M.D.

Consultant in Neurology

Robert A. Levine, M.D.

Consultant in Otoneurology

Richard F. Lewis, M.D.

Adrian J. Priesol, M.D.

ASSOCIATE STAFF

Surgeons

Jose D. Angeles, M.D.

Edward E. Jacobs, M.D.

Associate Surgeons

Richard R. Gacek, M.D.

Arthur M. Lauretano, M.D.

Trevor J. McGill, M.D.

Jo Shapiro, M.D.

J. Nicholas Vandemoer, M.D.

David M. Vernick, M.D.

Assistant Surgeons

Ramsey Alsarraf, M.D.

Neil Bhattacharyya, M.D.

David S. Caradonna, M.D.

Robert A. Frankenthaler, M.D.

Laura A. Goguen, M.D.

Assistants in Otolaryngology

Min S. Ahn, M.D.

Jeannie H. Chung, M.D.

Daryl G. Colden, M.D.

Thomas H. Costello, M.D.

Frank P. Fechner, M.D.

Randall D. Gaz, M.D.

Sapideh Gilani, M.D.

Harsha V. Gopal, M.D

Daniel J. Lee, M.D.

Richard E. Mugge, M.D.

Vijay K. Nayak, M.D.

Roger C. Nuss, M.D.

Dukhee Rhee, M.D.

Jeffrey C. Roach, M.D.

Noah S. Siegel, M.D.

Ceceila V. Tran, M.D.

Elizabeth S. Willingham, M.D.

Molly S. Zirkle, M.D. (LOA)

Consultant in Allergy and Immunology

Johnson Wong, M.D.

Consultant in Dermatologic Surgery

Oon T. Tan, M.D.

Consultant in Hyperbaric Medicine

David A. Peak, M.D.

Robert L. Sheridan, M.D.

John R. Sims, M.D.

Consultant in Maxillofacial Prosthetics

Matthew J. Jackson, M.D.

Consultant in Neurosurgery

G. Rees Cosgrove, M.D.

Consultant in Oral/Maxillofacial Surgery

John Buehler, M.D., D.M.D.

Leonard B. Kaban, M.D., D.M.D.

Maria J. Troulis, D.D.S.

Willie L. Stephens, D.D.S.

Consultant in Pain Management

Martin Acquadro, M.D.

Consultant in Pediatric Gastroenterology

Stephen C. Hardy, M.D.

Esther J. Israel, M.D.

Consultant in Pediatric Pulmonary

Kenan E. Haver, M.D.

Ngoc P. Ly, M.D.

Consultant in Pediatric Surgery

Daniel P. Ryan, M.D.

Consultant in Plastic Surgery

William G. Austen, M.D.

Daniel A. DelVecchio, M.D.

G. Gregory Gallico, M.D.

Peter E. Gee, M.D.

Leonard B. Miller, M.D.

Jonathan Schuster, M.D.

Sheldon Sevinor, M.D.

Jonathan Winograd, M.D.

Michael J. Yaremchuk, M.D.

CONSULTING STAFF

Consultant in Allergy and Immunology

Richard A. Moscicki, M.D.

COURTESY STAFF

Surgeons

Thomas R. Klein, M.D.

Associate Surgeons

Peter S. Ambrus, M.D.

Bruce R. Gordon, M.D.

Ely A. Kirschner, M.D.

Assistant Surgeons

Fred G. Arrigg, M.D.
Stuart H. Bentkover, M.D.
Bjorn Bie, M.D.
Thomas A. Chasse, M.D.
Pamela D. Dana, M.D.
Terry J. Garfinkle, M.D.
James P. Hughes, M.D.
Charles J. Leidner, M.D.
Jon B. Liland, M.D. (LOA)
Richard A. Moss, M.D.
Joseph H. Oyer, M.D.
Kathryn A. Ryan, M.D.
Jonathon S. Sillman, M.D.
Stephen A. Smith, M.D.
H. Dennis Snyder, M.D.

Assistants in Otolaryngology

Seema Byahatti, M.D.
Jane R. Clark, M.D.
James L. Demetroulakos, M.D.
Craig A. Jones, M.D.
Joshua L. Kessler, M.D.
R. William Mason, M.D.
William S. Postal, M.D.
Pratik Pradhan, M.D.
Robert A. Stern, M.D.

Consultants in Oral/Maxillofacial Surgery

Meredith August, M.D., D.M.D.
Carol Lorente, D.M.D.

Consultant in Plastic Surgery

Richard A. Bartlett, M.D.
Jonathan A. Hall, M.D.

HONORARY STAFF

Surgeons

Richard L. Fabian, M.D.
Edward J. Glinski, M.D.
C. Edward Jackson, M.D.
Parviz Janfaza, M.D.
Roy A. Johnson, M.D.
Robert E. Klotz, M.D.
John M. Kurkjian, M.D.
Thomas A. Mulvaney, M.D.

Associate Surgeon

William G. Lavelle, M.D.
Alfred D. Weiss, M.D. (Neurology)

EMERITUS STAFF

Surgeons

Howard M. Ecker, M.D.
Robert H. Freedman, M.D.
William L. Hayden, M.D.
Alfred L. Hurst, M.D.
Donald A. Keamy, M.D.
Joseph A. Moretti, M.D.
David L. Pierce, M.D.
John C. Trakas, M.D.

Assistant Surgeon

Usama S. Hamdan, M.D.

Research Fellows

Marcielle Abicalaffe, M.D.
Daniel Abreu, M.D.
Osamu Adachi, M.D., Ph.D.
Yasmeen Alhasawi
Fayez Bahmad, M.D.
Argyro Bizaki, M.D.
Renato Cal, M.D.
Zhiqiang Chen, Ph.D.
Eduardo Corrales, M.D.
Alexandros Georgolios, M.D.
Wangsong Gong, B.S.
Csilla Haburcakova, Ph.D.
Sang-Jun Jeon, M.D., Ph.D.
Dipti Kamani, M.D.
Peter Li, M.D.
Li Luo, Ph.D.
Efrain Martinez, M.D.
Rodrigo Martinez-Monedero, M.D.
Eui-Cheol Nam, M.D., Ph.D.
Yamileth Nicolau, M.D.
Fuxin Shi, M.D.
Kennyn Statler, Ph.D.
Haobing Wang, M.S.

Clinical Fellows

Mark Boseley, M.D.
Ronald de Venecia, M.D., Ph.D.
Steven Pletcher, M.D.
Lisa Reid, M.D.
Vicente Resto, M.D., Ph.D.

Residents

Kevin S. Emerick, M.D.
David A. Lewis, M.D.
Ritvik P. Mehta, M.D.
Konstantina M. Stankovic, M.D., Ph.D.
Aaron C. Lin, M.D.
Matthew T. Lister, M.D.
Michael G. Moore, M.D.
Jennifer J. Shin, M.D.
Carol M. Lewis, M.D.
Anthony C. Nichols, M.D.
W. Matthew White, M.D.
Cory C. Yeh, M.D.
Shelby C. Leuin, M.D.
H. Heidi Nakajima, M.D.
Andrew R. Scott, M.D.
Joshua B. Silverman, M.D., Ph.D.
Wade Chien, M.D.
Margo M. Benoit, M.D.

SERVICES

Audiological Services

Sharon Kujawa, Ph.D., Director

Auditory Evoked Response

Robert Levine, M.D., Medical Director

ENT Emergency Service

George Kazda, M.D., Director

Facial Plastics and Reconstructive Surgery Service

Mack L. Cheney, M.D., Director

General Otolaryngology

Gregory W. Randolph, M.D., Director

Head and Neck Surgical Oncology Service

Daniel G. Deschler, M.D., Director

Hyperbaric Oxygen Unit

Daniel G. Deschler, M.D., Director

Intermediate Care Unit

Daniel G. Deschler, M.D., Director

Jenks Vestibular Diagnostic Laboratory

Richard E. Lewis, M.D., Medical Director

Laryngology Service

Ramon A. Franco, Jr., M.D., Director

MGH/MEEI Cranial Base Center

Derrick T. Lin, M.D., Co-Medical Director

Medical Student Education

Steven D. Rauch, M.D., Coordinator
Daniel G. Deschler, M.D., Associate Coordinator

Otolaryngologic Pathology Service

Ben Z. Pilch, M.D., Director

Otology Service

Joseph B. Nadol, Jr., M.D., Director

Pediatric Otolaryngology Service

Roland D. Eavey, M.D., Director

Sinus Center

Salah D. Salman, M.D., Director

Thyroid and Parathyroid Surgery Division

Gregory W. Randolph, M.D., Director

Voice and Speech Laboratory

Glenn W. Bunting, M.S., Clinical Director
Ramon A. Franco, Jr., M.D., Medical Director

RESEARCH STAFF

Amelia Peabody

Otoimmunochemistry Laboratory

Joe C. Adams, Ph.D., Director

Audiology

Chris Halpin, Ph.D.
Barbara S. Hermann, Ph.D.

Clinical Outcomes Research Unit

Richard E. Gliklich, M.D., Director

Cochlear Implant Research Laboratory

Donald K. Eddington, Ph.D., Director
Joseph Tierney, S.M.

Eaton-Peabody Laboratory of Auditory Physiology

M. Charles Liberman, Ph.D., Director
Louis Braida, Ph.D.
M. Christian Brown, Ph.D.
Steven H. Colburn, Ph.D.
Bertrand Delgutte, Ph.D.
Dennis M. Freeman, Ph.D.
Barbara C. Fullerton, Ph.D.
John J. Guinan, Ph.D.
Kenneth E. Hancock, Ph.D.
Stephane Maison, Ph.D.
Jennifer R. Melcher, Ph.D.
William T. Peake, Ph.D.
Christopher Shera, Ph.D.
Mark Tramo, M.D., Ph.D.
Thomas F. Weiss, Ph.D.
F. Ishmael Stefanov-Wagner,
Research Support Engineer

Inner Ear Biophysics Unit

Ruth Anne Eatock, Ph.D.

Neurochemistry Unit

William F. Sewell, Ph.D.

Tillotson Unit

Albert Edge, Ph.D.

Wallace Middle Ear Research Unit

Saumil N. Merchant, M.D.
John J. Rosowski, Ph.D.

Electron Microscopy Laboratory

Charles M. Liberman, Ph.D., Director

Jenks Vestibular Laboratory

Conrad Wall,III, Ph.D., Director

Jenks Vestibular Physiology Laboratory

Daniel M. Merfeld, Ph.D., Director
Lionel Zupan, Ph.D.

Otopathology Laboratory

Saumil N. Merchant, M.D., Director
Clarinda C. Northrop

National Temporal Bone, Hearing and Balance Pathology Resource Registry

Saumil Merchant, M.D., Co-Director
Joseph B. Nadol, Jr., M.D., Co-Director

Department of Radiology

ACTIVE STAFF

Chief of Radiology

Hugh D. Curtin, M.D.

Assistants in Radiology

Paul A. Caruso, M.D.
Mary E. Cunnane, M.D.
Kenneth R. Davis, M.D.
Michael H. Lev, M.D.
James D. Rabinov, M.D.
Ashwini Mysore, M.D.
Sandra P. Rincon, M.D.
Laura Vitale Romo, M.D.
Pamela W. Schaefer, M.D.

Associate Staff

Associate Radiologist

R. Gilberto Gonzalez, M.D.

EMERITUS STAFF

Consultant in Radiotherapy

Milford Schulz, M.D.

Consulting Staff

Clinical Associate in Radiology
Jeanne D. Keller, M.D.

Clinical Associate in Radiology

Herman D. Suit, M.D.

Administration

President & CEO
John Fernandez (effective 01/01/07)
F. Curtis Smith (resigned effective 12/31/06)
General Counsel
Barbara F. Katz
Vice President for Human Resources
Christine Regan
Vice President for Finance
Peter J. Chinetti
Executive Vice President for Patient Services
Carol Covell, R.N., M.S.
Vice President for Development and Public Affairs
Bruce Jordan
Vice President for Business Development
Lisa Putukian
Administrative Director for Ophthalmology
Karen Smith (until 09/08/06)
John Blackburn (effective 10/16/06; interim, independent contractor)
Chief Information Officer
Alec Cheloff (effective 04/01/06)
Rich Mason (until 02/10/06)
Administrative Officer for Otolaryngology
Jean MacQuiddy
Vice President for Facilities & Planning
Robert Biggio
Vice President of Research Administration
Michael Collins
Chief Financial Officer, MEEA
Kenneth Holmes

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(As of 12/6/06)

1965 Mrs. John Lowell, Honorary
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1972 Matthew J. Burns
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1974 Bruce A. Beal
1977 John O'Sullivan Francis
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1986 Diane E. Kaneb
1986 Peter S. Lynch
1986 Malcolm L. Sherman
1987 Winthrop G. Minot
1988 William H. Darling, C.P.A.
1988 Charles F. Kiefer, III
1988 William E. Roman
1988 Kenneth R. Rossano
1989 Alan J. Dalby
1989 William G. Lavelle, M.D.
1989 J. Louis Newell, Jr.
1991 Professor Elliott L. Atamian (through 12/6/06)
1991 W. Gerald Austen, M.D.
1991 James F. Sullivan, Sr.
1993 Lucille Batal
1993 Claes H. Dohlman, M.D.
1994 Yu Sing Jung
1994 Loretta McLaughlin
1994 Ruth Z. Nadol
1995 Vivian C. Beard
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1995 Joseph W. Haley
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1995 Patricia McGovern
1995 Wayne D. Mackie
1995 David W. Scudder
1996 William F. Allen, Jr.
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1996 James F. Gerrity, III
1996 Anil Khosla (through 12/6/06)
1996 Nelson Y.S. Kiang, Ph.D.
1996 Jack Klugman, Honorary
1996 Donald M. Perrin
1996 John T. Preston
1996 Rand K. Spero
1996 Janet Zwanziger
1996 Ron Zwanziger
1997 Philip DuBois, Ph.D.
1997 Harvey F. Lodish, Ph.D.
1997 Herbert W. Pollack
1997 L. Dennis Shapiro
1997 Robert D. Sweeney
1997 Vincent Vitto
1998 Richard J. Chaffin
1998 Cheryl L. Clarkson
1998 Renée M. Landers
1998 Christopher E. Nolin
1999 Peter C. Aldrich
1999 Samuel Altschuler
1999 Nancy Jo Altschuler
1999 Andrew C. Culbert
1999 JoAnne Dickinson
1999 Gerard F. Doherty
1999 Richard L. Kobus
1999 Dr. Jacqueline W. Libergott
1999 John H. Marenghi
1999 Suzanne Murray
1999 Eugenia "Gene" Seamans
1999 John Larkin Thompson *
1999 Wat Tyler
2000 Sol Boucai
2000 Georgette Boucai
2000 Richard I. Freedman
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2000 John E. Kavanagh, III
2000 Jonathan W. Kutchins
2000 Carol Sawyer Parks
2000 Phyllis Redstone
2000 Robert H. Rines
2000 David N. Saul
2000 Gordon H. Silver
2000 William B. Smith
2000 Polly Townsend
2001 Richard H. Aldrich
2001 Joyce M. Cummings (through 12/6/06)
2001 Michael A. Ervolini
2001 Karen F. Green
2001 William E. Gundy
2002 E. Lorraine Baugh
2002 Patricia H. Brandes
2002 John P. Driscoll, Jr.
2002 Donald J. Evans
2002 Carol L. Horvitz
2002 Anna Faith Jones
2001 Christopher P. Kauders
2002 Shaun R. Levesque
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Named in honor of Edward Reynolds, M.D. (1793 – 1881), co-founder of MEEI, the Reynolds Society was established in 1986 to recognize those special friends who contribute at a leadership level during the fiscal year. MEEI thanks the following Reynolds Society members for their gifts and pledges of $2,500 or more from October 1, 2005 through September 30, 2006. Senior hospital-based Medical Staff and senior managers who give $2,000 or more, and other hospital-based Medical Staff and employees who give $1,000 or more are also recognized and thanked as Reynolds Society members.

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Dr. Roberto Pineda, director of the Keratorefractive Surgery Service, uses MEEI's newest laser for refractive surgery. MEEI was the first hospital in the United States to acquire the Wavelight Allegretto Eye-Q Excimer Laser, which is currently the fastest laser platform available to correct nearsightedness and farsightedness.

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** Deceased*
(M) Boston Marathon runner; gave or raised $2,500 or more

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The Foundation Fighting Blindness
Charles H. Hood Foundation
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A special thank you to the Friends of MEEI for their continuing support. The proceeds from funds raised at their 2006 gala were presented to Drs. Stacey T. Gray and Douglas J. Rhee to support their research efforts. The Friends' Spring Fling will be held on April 21 at the Langham Hotel in Boston. For information on joining the Friends, please call 617-573-3164.

THE 1824 CIRCLE

Unrestricted giving allows MEEI to respond flexibly to immediate priorities. To encourage unrestricted philanthropy at the leadership level, MEEI has established a special recognition group within the Reynolds Society known as The 1824 Circle. Membership is reserved for friends who make unrestricted gifts of $12,500 or more during the fiscal year. The Infirmary thanks the following 1824 Circle members for their gifts made October 1, 2005 through September 30, 2006.

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THE ANNIE SULLIVAN SOCIETY

The Annie Sullivan Society honors and recognizes the many thoughtful and generous individuals who have named the Massachusetts Eye and Ear Infirmary in their wills, planned gifts or estate plans. For more information about the benefits of the Annie Sullivan Society and information on how you can join, please contact Melissa Paul at 617-573-4168.

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team eye and ear runs the marathon

Members of Massachusetts Eye and Ear Infirmary's (MEEI) inaugural marathon team, Team Eye and Ear, ran in the 110th Boston Marathon last year. In addition to dedicating months of rigorous training to brave the infamous "Heartbreak Hill" to achieve their dream of running the marathon, each runner raised funds to help MEEI provide the best possible care to its patients and to conduct groundbreaking research. MEEI's marathon team would not have been possible without the generosity of the Boston Marathon's lead sponsor, John Hancock, and John Hancock's President and CEO John D. DesPrez III, who is also an MEEI Trustee. In this photo, Team Eye and Ear members Jean DiPietro and Debbie Comperchio eagerly near the finish line.

Massachusetts Eye and Ear Infirmary

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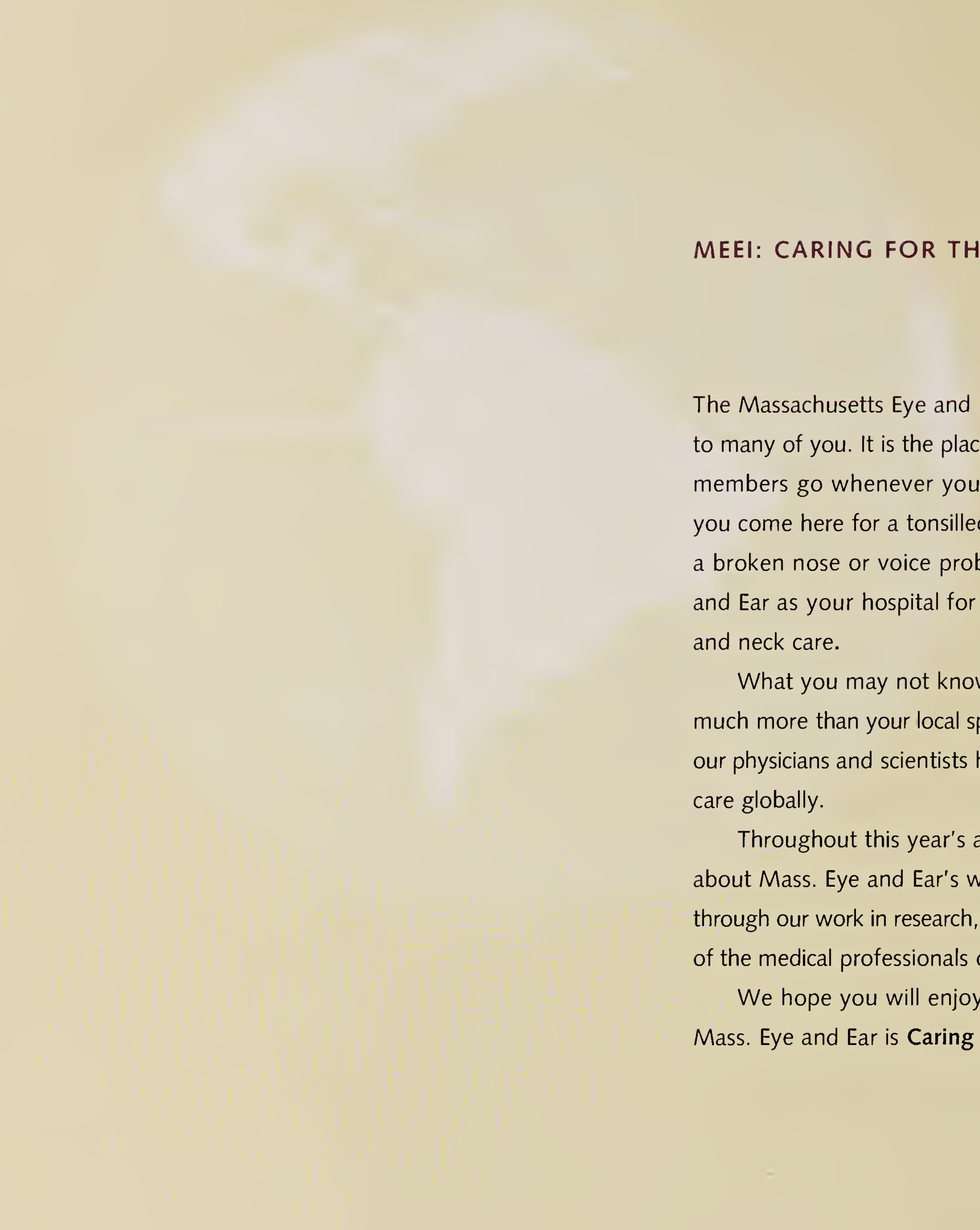
Massachusetts
Eye and Ear
Infirmary

2007
Massachusetts Eye and Ear Infirmary

ANNUAL REPORT



MEEI: CARING FOR THE GLOBAL COMMUNITY

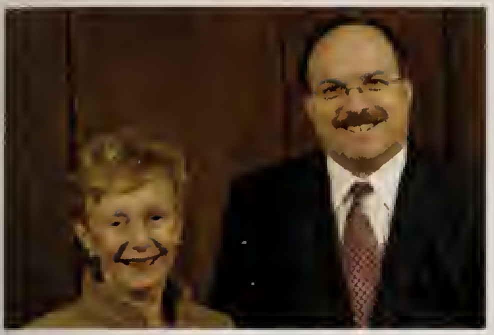
The Massachusetts Eye and Ear Infirmary (MEEI) is familiar to many of you. It is the place where you and your family members go whenever you need expert care. Whether you come here for a tonsillectomy or cataract surgery, a broken nose or voice problems, you know Mass. Eye and Ear as your hospital for eye, ear, nose, throat, head and neck care.

What you may not know is that Mass. Eye and Ear is much more than your local specialty hospital. The work of our physicians and scientists has a major impact on patient care globally.

Throughout this year's annual report you will learn about Mass. Eye and Ear's worldwide leadership role through our work in research, patient care and the education of the medical professionals of tomorrow.

We hope you will enjoy learning more about how Mass. Eye and Ear is **Caring for the Global Community.**

on the cover: *Audiologist Susan Mumby, M.S., CCC-A/SLP, performs a hearing screening on newborn Max O'Shea. MEEI audiologists developed technology to screen for and diagnose hearing loss in newborn babies in 1982. This technology is now used to screen the hearing of babies across the nation and the world.*



REPORT OF THE

Chair and President

As 2007 comes to an end, we would like to thank all of you for an exciting and productive year at the Massachusetts Eye and Ear Infirmary (MEEI). We are very enthusiastic about the future. Your strong interest, hard work and generous support are greatly appreciated. Thank you for being our partners in supporting the quality and innovation that make MEEI a world leader.

This year we focused intensely on developing a strategy for the future. Through an extensive shared orientation process, the leadership team came to the conclusion that although we have a strong foundation, we must develop a plan to ensure the vitality of our mission for years to come. This team, which includes the Board, chiefs, faculty and senior managers, used these principles to guide our thinking during the planning process:

Quality Patient Care. In every decision we make, we will ensure that our primary focus is on the delivery of the highest quality of patient care possible and that we will continue to work to improve the level of care that is possible for patients everywhere.

Service Excellence. We will make access to the care we provide easier for a wider range of patients, expanding our range by forging new relationships and alliances. We want our patients, physicians, researchers and employees to have the best experience possible in a healthcare environment, respecting the unique needs and goals of all.

Research and Academic Leadership. The progress of patient care depends on our researchers' innovations. In addition, the future of our health care activities presumes superb educational programs.

Fiscal Health. To accomplish our mission, we all must work to strengthen our financial performance. By following these guiding principles we arrived at a plan designed for MEEI to thrive. It puts quality care for our patients first, while strongly supporting the other aspects of MEEI's mission: performing research to improve lives and training the world's medical specialists of tomorrow.

We are working to transform the overall patient experience by expanding access to MEEI physicians and improving customer service. We will upgrade our surgical, clinical and research facilities with leading-edge technology. We will foster a more collaborative environment for all MEEI employees. We hope our investment will give our doctors, nurses and researchers the tools they need to maximize their patient care capabilities, while recruiting and retaining the best and the brightest professionals in our fields.

We are pleased to share highlights from fiscal year 2007.

Enhancing Patient Care

Our Surgery Expansion Project will increase our surgical capacity and improve the overall patient experience. The renovation will eliminate the need for patient elevator transports and better separate our pediatric and adult patient populations. These changes should improve efficiency by increasing timely starts and decreasing turnover time. New equipment, streamlined processes, improved amenities and improved surgical experiences will not only help us recruit for the future, but ensure a better patient experience. This year MEEI opened its newly renovated Pediatric Ophthalmology clinic, which includes new equipment purchased with the generous support of the Massachusetts Lions Eye Research Fund and the Lions

MEEI: CARING FOR THE GLOBAL COMMUNITY

When 5-year-old Juan Pablo Anzueto traveled to MEEI from Guatemala, he was profoundly deaf and in need of a cochlear implant. Thanks to the generosity of the Ray Tye Medical Aid Foundation and MEEI's Chief of Otolaryngology Dr. Joseph Nadol, who performed surgery, Juan Pablo heard his parents' voices for the first time in 2007. **Left:** *Juan Pablo is shown with Audiologist Ann-Marie Hennessey, who is using play therapy to assess his progress with the implant.*

Clubs International Foundation. A renovated Pediatric Otolaryngology space also opened this year. Both renovations will help us better serve our youngest patients.

Medical Staff Excellence

We would like to acknowledge the unparalleled excellence and commitment of our medical staff and the leadership of Dr. Salvatore Basta, Chief of Anesthesiology; Dr. Hugh Curtin, Chief of Radiology; Dr. Joan W. Miller, Chief of Ophthalmology; Dr. Joseph B. Nadol, Jr., Chief of Otolarygology; and Dr. Robert Hughes, Chief of the Medical Unit. Their vision, dedication and skillful management enable MEEI to care so well for those who need us most. We added seven dynamic physicians, many who trained here, to our hospital-based faculty in 2007: Dr. Scott Greenstein, Comprehensive Ophthalmology; Dr. Carolyn Kloek, Comprehensive Ophthalmology; Dr. Demetrios Vavvas, Retina; Dr. Stacey Brauner, Comprehensive Ophthalmology and Glaucoma services; Dr. Samir Melki, Refractive Surgery; Dr. James Kirszrot, Eye Plastics; and Dr. Kevin Emerick, Head and Neck Surgical Oncology.

Information Services

Information Services continued to deliver advanced clinical systems and enhanced information technology infrastructure in 2007, all of which will support excellent patient care. Our Outpatient Electronic Medical Record (LMR) is being used by more than 70% of our full-time physicians and we will complete the rollout by the end of this year. LMRs allow faster access to patient records, which translates into more seamless clinical care.

Generous Friends

This year provided eloquent evidence, once again, of how deeply our generous friends care about MEEI, its physicians and our mission. This year we completed the funding for the Claes H. Dohlman Professorship of Ophthalmology, thanks to a truly extraordinary outpouring of support

right: *Dr. Claes Dohlman and Dr. Helene Lam, a cornea fellow, discuss a patient. Committed to saving people from blindness, Dr. Dohlman has been a teacher and mentor to hundreds of ophthalmologists, many of whom now lead ophthalmology departments at hospitals and medical schools the world over, and has devoted 40 years of research to developing a safe and inexpensive artificial cornea, the Boston Keratoprosthesis. Millions of people blinded by corneal disease in the United States and in developing countries will reap the benefits.*

Claes Dohlman, MD,PhD
Ophthalmology
HELENE
LAM MD
CORNEA
Helene Lam
Cornea & Ref
Surgery S

MASS. EYE AND EAR IN YOUR COMMUNITY

Mass. Eye and Ear's Surburban Centers are an important way that the hospital can provide care to individuals in their own communities. Dr. David Nash, pictured left, is an otolaryngologist at the North Suburban Center in Stoneham, Mass. He and his colleagues provide a full range of ear, nose and throat medical care for adults and children. The North Suburban Center expanded this year to become a subspecialty-based ophthalmology referral and consultation service working in collaboration with the regional North Shore general ophthalmology and optometric physicians. MEEI maintains audiology and hearing aid services at the Center. Other Mass. Eye and Ear suburban centers are located in Quincy (the South Suburban Center) and at Newton-Wellesley Hospital (the West Suburban Center).

from our Ophthalmology alumni, 140 who gave nearly $1,200,000. We also initiated planning for a center of excellence in glaucoma, to which early donors have already committed more than $500,000. Membership in the Reynolds Society reached its highest total ever at 514. Special thanks for a second year to John Hancock, which donated 50 Boston Marathon numbers; Team Eye and Ear raised more than $160,000 this year, and more than $350,000 over the past two years. Great appreciation goes to Diane E. and Al Kaneb, whose philanthropy helped boost our unrestricted cash total to more than $3,500,000, the highest level in memory.

Generous friends gave $9,771,994 to MEEI in fiscal year 2007. Highlights include the following major gifts, pledges, planned gifts, grants, trusts and bequests:

> Diane E. and Al Kaneb made new unrestricted gifts of almost $1,750,000.

> Norman Knight made new gifts and pledges of more than $600,000 in support of a new Ophthalmology Technology Fund, a new Nursing Scholarship Fund, the Child Life Program, the Knight Leadership Development Awards, and two employee funds.

> Genentech made a gift of $300,000 for *Ophthalmology Rounds*, a publication mailed to 17,500 ophthalmologists and trainees in the United States and posted online.

> Frances and Peter Seidenberg established a planned gift of $296,000 to support research in ocular melanoma directed by Dr. Evangelos Gragoudas.

> Allergan Pharmaceuticals made grants totaling more than $282,000 for the research of Drs. Reza Dana and Douglas Rhee, for the Dohlman Professorship and for a visiting professorship.

> Paul Fireman and his wife, Phyllis, established The Phyllis and Paul Fireman Compassionate Care Fund with a $250,000 gift to provide lodging, transportation, food, glasses and other necessities for needy patients and their families.

> Nick Wheeler made gifts totaling $200,000 to support the work of Dr. Nadol.

> Paul Margolis pledged $200,000 to support the glaucoma research of Dr. Cynthia Grosskreutz.

- > The late John Larkin Thompson, through his estate and a life insurance policy, made unrestricted gifts totaling $200,000.
- > Anonymous donors pledged $200,000 through their estate plans for a professorship honoring Dr. Deborah Pavan Langston.
- > Our decades-long partnership with the Massachusetts Lions was enhanced yet again with a grant of $155,000 for eye research.
- > Alcon made grants totalling $175,000 for the Dohlman Professorship and a cataract course.

MEEI has several major capital needs, and in fiscal year 2008 philanthropy will be crucial to a major renovation and upgrade of our surgical facilities and research labs, and for the acquisition of leading-edge technology. It is enormously reassuring to us to know we can count on the generosity of so many committed friends and the philanthropic leadership of our Board and Trustees.

Research Progress

Our research program was active this year with a research funding portfolio that remained quite diversified, reflecting our researchers' and clinicians' high caliber of creative and innovative scientific work. The following are some of the larger new research grants received this year:

- > The National Institutes of Health, National Eye Institute (NEI) awarded a five-year grant of more than $1.6 million to Francesca Pignoni, Ph.D., for her project on eye development.
- > Dr. Joseph Rizzo received two federal grants: $1.4 million for development of a novel retinal prosthesis that is molecular and configurable and $1.2 million for his work with a microelectronic implantable retinal prosthesis.
- > National Institutes of Health, National Institute on Deafness and Other Communication Disorders (NIDCD) awarded Daniel Merfeld, Ph.D., a two-year grant of $962,625 to continue his work to develop a semicircular canal prosthesis.
- > John Rosowski, Ph.D., received a two-year grant of $618,254 from the NIDCD to continue his research on computer-based holography and middle ear function.
- > Dr. Ivana Kim received a two-year grant of $544,120 from Genentech for a clinical trial on the safety and efficacy of ranibizumab injection with people with clinically significant macular edema.
- > Ruth Anne Eatock, Ph.D., was awarded a grant of $511,152 from the NIDCD (Ohio State) for her work on the biomechanics of vertebrate hair cells. She also received a grant of $413,337 from the NIDCD for her project on sensory processing in mammalian vestibular organs.
- > The NIDCD awarded Jarema Malicki, Ph.D., a grant of $352,000 for his research on the zebrafish model of microphthalmia.

Our researchers and postdoctoral fellows were generously supported by many foundations, including the Massachusetts Lions, Fight for Sight, Foundation Fighting Blindness, Knights Templar, Glaucoma Foundation, Research to Prevent Blindness, and the Deafness Research Foundation. We are most grateful for their support.

Intellectual Property and Patents

Royalties from licensing intellectual property developed at MEEI continue to grow substantially with gross revenues exceeding $3.4 million in fiscal year 2007, more than an 18-fold increase from fiscal year 2000 and a 31% increase from last year. This includes a one-time $1.25 million payment for MEEI's rights in thalidomide analogs and a significant amount from royalties on sales of optical coherence tomography equipment (Drs. Puliafito, Lin, Schuman et al). We also negotiated several agreements with our licensees and executed a number of inter-institutional agreements with other research institutions for jointly held rights. In addition, numerous patents were issued to MEEI this year.

Educational Mission

Training the next generation of surgeons and scientists is an especially important part of our mission and demonstrates global leadership in our specialties. MEEI celebrated the addition of three new Harvard Medical School Professors in fiscal year 2007. Drs. Michael McKenna and Saumil Merchant were promoted to Professor of Otology and Laryngology. Dr. Reza Dana was promoted to Professor of Ophthalmology. Dr. Simmons Lessell was named "Teacher of the Year" in ophthalmology. Dr. Hugh Curtin was honored with the William W. Montgomery Award for Excellence in Teaching. The Otolaryngology Resident Teaching Award went to Dr. Michael Moore. Many members of our medical staff, too numerous to mention all by name, received recognition for their work. MEEI continued to be the teaching affiliate for Harvard Medical School in ophthalmology and otolaryngology residency training. This year we trained more than 100 residents and fellows in what continues to be a highly competitive program.

Nursing Excellence

Each month we receive many letters that describe the outstanding care provided by our nurses. MEEI's nurses, whether in the clinics, on patient floors or in the ORs, are second to none. What many people may not realize is that our nurses are also leaders in their fields and involved in teaching others. For example, Belinda Van Tassell, R.N., 9th Floor Ambulatory Care Unit, won first place for her poster presentation at the Society of Otolaryngology Head Neck Nursing Annual Symposium, while Sandra Pullen, R.N., 11th Floor Medical Surgical Unit and Intermediate Care Unit, won second place for her poster. In addition, Lisa Godefroi, R.N., Laser Center and Emergency Department, also presented at this meeting. Pauline Wright, R.N., M.S., Med, SurgiCenter, Eileen Gunderson, R.N., Operating Room, Sylvia Dodge-Palomba, R.N., Pediatric Unit, and Debbie Rich, R.N., B.S.N., Nurse Manager, Ambulatory Care Unit, all presented papers at the American Society of Ophthalmic Registered Nurses Annual Eye Academy Meeting. Finally, *Nursing2006*, a publication distributed in 2007, included an article, "A New Outlook for Age-Related Macular Degeneration," written by Carol Covell, R.N., M.S., Debbie Rich, R.N., B.S.N., JoAnn Graziano, R.N., and Kathy Tobin, R.N. Congratulations to all of them and to the many other nurses who have been recognized for their professional expertise.

Staff Development

MEEI's ability to operate efficiently and to provide the best in patient care is also based on the quality of its managers. We are pleased to note that we have done an effective job in recruiting top talent to our ranks. This year we welcomed Sean Baggett as Director Network Services and the Data Center; William Gonzalez as Manager Credit and Collections in Patient Accounts; Leo Hill as Chief Engineer Research I in Research Administration; Bonnie Kelly as Director Patient Access; Jude O'Brien as Manager Research Administration; Sheila O'Keefe as Nurse Manager Operating Room; David Read as Vice President Ophthalmology; Nicholas Seremetis as Director Dietary; and Jennifer Street as Vice President Communications. In addition, we promoted Michael Canning to Director Support Services; Sharyn Ghiloni to Controller MEEA; and Amy Sands to Manager Communications/Customer Service.

Financial News

The year ended well with patient volume slightly ahead of budget in most areas. The last few months were particularly strong as we started to realize increased volume from the practices of the physicians that we have added to our staff over the past two years. The additional staff enabled us to budget higher volumes for our next fiscal year, the first time in several years that we have been able to do that. Our financial results also reflect this, with each company that makes up the Foundation doing better than budget and the Foundation overall posting a bottom-line surplus for the year of just under $2 million. We hope to build on that surplus in fiscal year 2008 in order to better invest in new programs, new technology and recruiting the best and brightest physicians, nurses, researchers and staff.

MEEI: CARING FOR THE GLOBAL COMMUNITY

Many members of MEEI's medical staff teach others throughout the world how to care for those who need their care the most. Pediatric Optometrist Kimberley Chan was a course instructor in the Central American Summer Program and introduced optometry students to the skills needed to deliver eye care in the developing world and the satisfaction one gains from humanitarian work. For many of the 1,000-plus people examined during Dr. Chan's trip to El Salvador, this was their first formal opportunity for eye care. **Left:** *Kimberley Chan, O.D., examines a woman's eyes in El Salvador.*

Suburban Centers

The suburban centers saw growth this year with new staff and increased patient visits. **The South Suburban Center** in Quincy, Mass., had nearly 20,000 patient visits and continued to serve people on the South Shore through its affiliation with several community hospitals and MEEI. They opened a new office at Milton Hospital staffed by Dr. Ed Reardon and Kirsten Holt, N.P. The South Suburban Center offered a full range of outpatient ear, nose and throat services and surgical management for adults and children. **The North Suburban Center** in Stoneham, Mass., expanded to become a subspecialty-based ophthalmology referral and consultation service working in collaboration with the regional North Shore general ophthalmology and optometric physicians. In ophthalmology, the Stoneham facility doubled from four MEEI-based physicians to eight and began offering care in glaucoma, cosmetic and reconstructive oculoplastics, pediatric ophthalmology, retina and uveitis subspecialties. In addition to ophthalmology services, the center also provided a full range of ear, nose and throat medical care for adults and children with activity both at MEEI and at community hospitals. MEEI maintains audiology and hearing aid services at the center. **The West Suburban Center**, located at the Newton-Wellesley Hospital, is the only suburban center and community hospital that has a dedicated pediatric otolaryngologist and coverage in the emergency room provided by MEEI pediatric ENT physicians. The West Suburban Center provided services including facial plastic and reconstructive surgery, general ENT, head and neck surgery, ENT pediatric care, and audiograms. Patient volume there was 10,500, increasing 5.5% over the past year and 57.5% since 2000. And finally, MEEI is working with Compass Medical in East Bridgewater to open ophthalmology and otolaryngology services in their facility. The suburban centers are an important way we can provide services to people in their own communities.

Spreading the Word

Critical to our success is that everyone with a connection to MEEI helps tell our story. Here are a few highlights from the year. Marketing built on the strong relationship between MEEI and WGBH (Ch 2), airing TV spots for many of our specialties. Skyscraper banner ads were introduced on the WGBH website and 15-second spots on WGBH radio 89.7 FM. Inspirational brand radio spots aired in the Spring and Fall on stations WBZ, WEEI, WODS and WMJX. Marketing worked with MEEI friend Norman Knight to develop three Hyperbaric Medicine Center PSAs, which aired on all five Greater Media Radio stations during December and January and translated to more than $1 million in air time. We are most grateful to

MEEI: CARING FOR THE GLOBAL COMMUNITY

Childhood or pediatric glaucoma is a rare condition that may be inherited, caused by incorrect development of the eye's drainage system before birth. This leads to increased intraocular pressure, which in turn damages the optic nerve, leading to blindness. One-and-a-half year old Mauricio Chavez came to MEEI from Peru to receive advanced treatment for his pediatric glaucoma from Dr. Douglas Rhee. Thanks to treatment received here, Mauricio is doing quite well. **Left:** *Dr. Douglas Rhee shares a moment with Mauricio.*

Mr. Knight and Peter H. Smyth of Greater Media for their continued loyalty and generosity. We added the World Champion Red Sox to our marketing mix; Laser Vision Correction radio spots aired during Red Sox games played on Saturdays and Sundays. The Visitors TV program, including a 30-second TV spot, was added to target business travelers staying in over 9,000 hotel rooms in Boston. Brochures for Vision Rehabilitation Center, Pediatric Airway/Swallowing Center, and Head and Neck Surgery were developed and mailed to more than 3,800 referring physicians.

In Conclusion

As you see from our achievements this year, we have made much progress and have much more to look forward to moving ahead. Now is an **exciting** time at MEEI. We believe that with our new strategic direction, we will expand access to the outstanding care provided by MEEI physicians, enhance customer service, and give our doctors, nurses and researchers the needed tools to provide the finest patient care. With these investments, we will be able to recruit and retain the best professionals in our fields. We appreciate your ongoing support and enthusiasm.

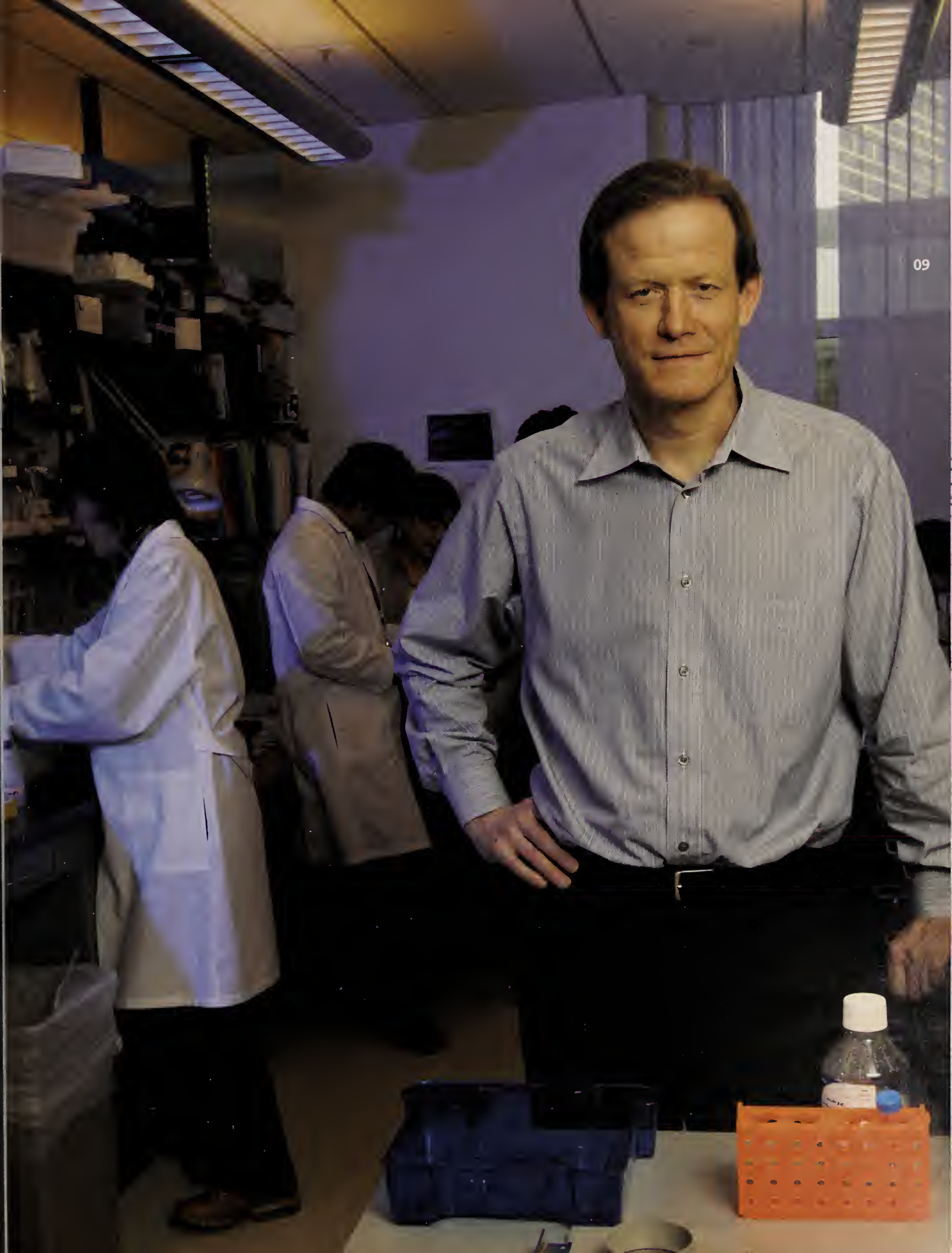
Diane E. Kaneb

Diane E. Kaneb
Chair

John Fernandez

John Fernandez
President & CEO

right: *Albert Edge, Ph.D., is shown in the Neil and Louise Tillotson Laboratory for Cell Biology of the Inner Ear, where he conducts research related to stem cells and hearing loss. The lab is part of the internationally known Eaton-Peabody Laboratory, the largest hearing research laboratory in the world, which is exploring the underlying mechanisms of hearing.*



REPORT OF THE

Chief of Ophthalmology

The MEEI Department of Ophthalmology looks at 2007 with a gratifying list of accomplishments. I continue to marvel at the superb clinical service we provide our patients as well as remarkable advances from our exceptional team of researchers and the educational efforts of our diverse staff.

A productive and growing faculty is critical to our Department's success. Thanks to the energetic efforts of many faculty members, we recruited outstanding new staff. Dr. Carolyn Kloek, Chief Resident in 2006-2007, joined Comprehensive Ophthalmology Services (COS). Also new in COS are Dr. Scott Greenstein, previously in private practice in Connecticut; and Dr. Stacey Brauner, a recent Glaucoma Fellow, who will split her time between COS and Glaucoma. Dr. Demetrios Vavvas, former Chief Resident and Vitreoretinal Fellow, joined the Retina Service. Dr. James Kirszrot, a recent Fellow in Oculoplastics, joined the staff part time.

Faculty development resulted in several rising leaders. Dr. Roberto Pineda was named Director of the Keratorefractive Division within the Cornea and Refractive Surgery Service. Dr. George Papaliodis, who has been Acting Director of Uveitis and Immunology, assumed the permanent Director position. Dr. Aaron Fay was appointed to serve as Acting Director of Ophthalmic Plastic Surgery.

David Read, Vice President Ophthalmology, joined us in April. His initial goals include expanding outreach of MEEI ophthalmology clinics; improving the overall patient experience; forming strategic alliances with other health care institutions; and developing new programs in eye care. David has spearheaded the opening of a new MEEI clinic in Compass Medical Group's headquarters in East Bridgewater, Mass. Working in partnership with Eye Health, MEEA physicians will provide subspecialty eye care there. We also expanded services at our Stoneham Suburban Center and now offer more sessions with expertise in glaucoma, uveitis, retina, oculoplastics and pediatric ophthalmology.

State-of-the-art equipment for diagnosis and treatment is vital to provide the very best in patient care. In addition to the new Wavelight LASIK platform, an extremely fast refractive technology, we acquired other new clinical equipment this year:

> Retcam digital imaging system, used in documenting retinopathy of prematurity in newborns;

> Confocal imaging system in the Cornea Service, utilized in detecting infections that are difficult to detect through standard means; and

> Scanning Laser Ophthalmoscope for Vision Rehabilitation, an important tool for identifying functional areas of the retina.

This year MEEI moved toward paperless charting through an electronic Longitudinal Medical Record (LMR). Using a system developed by Partners Health Care, the LMR allows quick access to ophthalmology and other pertinent clinical data by providers from all Partners Health Care institutions. MEEI users recognize important benefits in the LMR such as improved communication among providers, decreased chart storage space, and the ability to access a large database for clinical research in ophthalmology. A digital image archival system will interface with the LMR to allow viewing of all ophthalmology images.

The Eye Pathology Service was reorganized with MGH Pathology and will be led by Dr. Frederick A. Jakobiec, Henry Willard Williams Professor Emeritus, as Director of the David Glendenning Cogan Laboratory of Ophthalmic

HELPING THOSE WHO NEED US MOST

MEEI and its physicians continued their commitment to providing service to the community through screenings, lectures and participation in health fairs. MEEI's Vision and Hearing Care Program cared for the increasing numbers of children at the Neighborhood House Charter School in Dorchester, Mass. We have watched this school and its children grow during our multi-year relationship. We also collaborated with Prevent Blindness Massachusetts to provide free eye exams to adults in the Somerville Center for Adult Learning Experiences (S.C.A.L.E.). The Audiology Department's seventh annual "Have You Heard" seminar, organized by Sharon Kujawa, Ph.D., was a resounding success. And finally, MEEI was recently the proud host of the fourth annual Atresia and Microtia Conference, organized by the Let Them Hear Foundation. World-renowned specialists, including MEEI Pediatric Otologist Dr. Ron Eavey and Audiologist Barbara Herrmann, Ph.D., CCC-A, lectured about the treatment of microtia and atresia, and provided 250 free physician consultations, 12 free C.T. scans and 11 free audiograms for 62 families, 57 of whom had never had an atresia and microtia consultation. **Left:** *Naoko Kohara, a pediatric ophthalmology orthoptist, conducts a vision screening at the Neighborhood House Charter School.*

Pathology. We are delighted that Dr. Jakobiec, former Chief and Chair of Ophthalmology, has returned to the MEEI faculty. He has already done much to invigorate and broaden eye pathology and to develop innovative teaching programs. Joining the service as Associate Director is Dr. Anat Stemmer-Rachamimov.

Our commitment to community service is unwavering. Residents and fellows from MEEI provided screening clinics at the Somerville Center for Adult Learning Experiences; at the Harriet Tubman House in Boston's South End; and at the Neighborhood House Charter School in Dorchester. Residents also helped staff the Massachusetts Lions Club Eye Mobile in several locations. Dr. Roberto Pineda, Cornea and Refractive Surgery Service, traveled to Mumbai, India, this past spring with ORBIS International, a physician group dedicated to teaching new skills to local ophthalmologists. Dr. Kimberley Chan, Pediatric Ophthalmology Service, spent two weeks in Nicaragua and El Salvador this summer to deliver care to underserved rural populations.

It is with great sadness that we note the death this past May of our esteemed colleague, Dr. Stephen Fricker, pediatric ophthalmologist and retina physiologist who was associated with MEEI for over 40 years. A devoted teacher, he was beloved by his patients and revered by students and colleagues. A fund has been initiated to honor his legacy at MEEI.

Faculty Development/Awards

Each spring HMS hosts a Leadership Forum, in which I participate. This past spring, two of our faculty, Dr. Mary Lou Jackson, Director of Vision Rehabilitation, and Dr. Sherleen Chen, Director of COS, attended. In August I spoke at the Women in Ophthalmology Leadership Summit in Sedona, Arizona. Eight women physicians from MEEI joined me at this meeting, which provided excellent training in leadership for faculty of all levels.

An important goal of the Department is to expand the number of endowed Professorships at HMS. These provide important financial support and international recognition for the most accomplished contributors among our

MEEI: CARING FOR THE GLOBAL COMMUNITY

According to the World Health Organization, 37 million people worldwide are blind, yet 28 million of them don't need to be. Physicians like Dr. Roberto Pineda are doing their part to improve the statistics. Dr. Pineda has volunteered with ORBIS International, a non-profit humanitarian organization, for nearly 10 years. He restored sight to one Ethiopian man by inserting a Boston Keratoprosthesis, a device invented by MEEI's Dr. Claes Dohlman, which is now used all over the world. **Left:** *Dr. Pineda is pictured with two women who received corneal transplants during an Ethiopian mission.*

ranks. This year, we completed funding for two professorships. Dr. Simmons Lessell is the first incumbent of the Paul A. Chandler Professorship in Ophthalmology. Dr. Lessell trained under Dr. Chandler, and had this to say about being named to the Chair. "Dr. Chandler was the consummate clinician and teacher, with a fine sense of humor—worthy of honor... I have attempted to emulate his qualities, and I will accept the honor of receiving the Chandler Professorship as evidence that I have to some extent succeeded." Fundraising for the Claes H. Dohlman Professorship in Ophthalmology is now complete, with pledges expected over the next five years. We were happy to accomplish this in time for Dr. Dohlman's 85th birthday this fall. We hope to announce an incumbent within the next few months.

The American Academy of Ophthalmology recognized Dr. Dohlman as its 2007 Academy Laureate, the Academy's highest honor. Dr. Dohlman was honored as the founder of modern corneal science and for his dedication to teaching and education. Other AAO awardees include Dr. Joseph Rizzo, Neuro-Ophthalmology (Senior Achievement Award), Dr. Kathryn Colby, Cornea and Refractive Surgery Service, and Dr. Douglas Rhee, Glaucoma Service (Achievement Awards), and Dr. Reza Dana, Director of the Cornea and Refractive Surgery Service (Service Recognition Award). Dr. Mary Lou Jackson, Director of Vision Rehabilitation Service, is the newly elected Chairperson of the AAO's Low Vision Committee.

Dr. Aaron Fay, Acting Director of Ophthalmic Plastic Surgery, was honored with the Vascular Birthmark Foundation 2006 Physician of the Year Award for his role, along with a colleague, in restoring 20/20 vision to a little girl, who risked total blindness. Dr. Fay also received the 2007 MEEI Fellowship, part of the HMS Scholars in Medicine program and a prestigious career development award.

Research

Clinical trials are an important aspect of translational medicine, and they provide our patients with access to the most current advances in medicine. Ophthalmology patients at MEEI are enrolled in more than 20 clinical trials, including a comparison of Avastin® and Lucentis® in treating wet macular degeneration, Lucentis-formulated eye drops to suppress corneal neovascularization and the latest Age-Related Eye Disorder Study (AREDS), which evaluates the benefit of vitamins, supplements, and other compounds in maintaining eye health.

We have had notable success in our basic and translational research programs. Despite increasingly scarce federal dollars, successful new proposals resulted in Dr. Francesca Pignoni's $1.7 million National Eye Institute grant for her work in genetic controls, as well as

Dr. Joseph Rizzo's $2.6 million Department of Defense awards for his development of the retinal prosthesis. Renewal funding resulted in $1.9 million to support Dr. Clint Makino's work in retinal cell physiology, $1.7 million for Dr. Cynthia Grosskreutz's neuroprotection research, and an additional $1.5 million toward Dr. Pignoni's work.

Education

The duty to teach future ophthalmologists and train tomorrow's scientists is an important part of our mission, and one that we find professionally satisfying. Seventy-five medical students completed elective rotations in ophthalmology. Our residency program received more than 500 applicants for its eight positions. Our clinical fellowships are also actively sought and provide critical subspecialty training. MEEI's Glaucoma Service and Cornea Service fellowships recently received Allergan Horizon Grants, prestigious awards in recognition of their excellent training.

We are excited to announce a new initiative to endow a glaucoma fellowship at MEEI. This type of funding enhances our ability to maintain excellence as a training center for glaucoma clinical practice and research. One of our most distinguished alumni, Dr. Richard Simmons, began the fund with a generous lead gift and is working with us on a campaign to fully fund the fellowship. The Richard and Ruthanne Simmons Glaucoma Fellowship will honor Dick and his late daughter, Ruthanne, who was also a respected glaucoma specialist.

The Department has continued to offer an innovative range of courses to trainees and practitioners:

> The Neuro-Ophthalmology Service held the Neuro-Ophthalmology Fall Festival, a two-day didactic forum, attended by 60 clinicians.

> The Department offered its Intensive Cataract Surgical Training Course to 125 2nd-year U.S. ophthalmology residents.

> The 63rd Lancaster Course in Ophthalmology was held at Colby College, Maine. Faculty recruitment was led by Dr. Lucy Young, Retina Service.

The 2007 HMS Department of Ophthalmology graduation was held June 14, 2007. MEEI President and CEO John Fernandez gave the Frederick A. Jakobiec Lecture. On June 15 and 16, the Department hosted its Annual Meeting, a symposium, co-chaired by Drs. Kathryn Colby and Joseph F. Rizzo. The Marianna Mead Lecture was given by Dr. Nicholas J. Volpe, MEEI alumnus, now Professor of Ophthalmology at Scheie Eye Institute, University of Pennsylvania. Distinguished Alumni Lectures were presented by Drs. E. Michael VanBuskirk, Clinical Professor of Ophthalmology at Oregon Health and Sciences University and Evangelos S. Gragoudas, HMS Professor of Ophthalmology and Director, MEEI Retina Service. During the symposium, a bust of Dr. Gragoudas sculpted by Dr. Ephraim Friedman was unveiled.

Academic promotion is an important recognition of faculty contributions to teaching and research in Ophthalmology. Dr. Ivana K. Kim, Retina Service, was promoted to Assistant Professor of Ophthalmology. Dr. Cynthia Grosskreutz, Co-Director, Glaucoma Service, was made Associate Professor of Ophthalmology. Dr. Reza Dana, Cornea and Refractive Surgery Service, was promoted to HMS Professor of Ophthalmology.

My report would not be complete without an expression of gratitude to the Board and Administration for their support, to our generous patients and friends, and to our dedicated administrative staff, technicians and nurses, whose work underlies so much of our success. I am especially gratified to work with our President and CEO, John Fernandez, whose enthusiasm has infused all of us with a new sense of energy. I look forward with great optimism to future developments in the Department of Ophthalmology.

Joan W. Miller

Joan W. Miller, M.D.
Chief of Ophthalmology

REPORT OF THE
Chief of Otolaryngology

The mission of the Department of Otolaryngology is to provide the best possible care for patients with disorders that affect the ear, nose, throat, head and neck regions; to conduct clinical and basic research in an effort to improve that care in the future; to participate in the education and training of future health care and research professionals; and to disseminate health-related information to the profession and to the general public. There was significant activity in all areas of the mission this year.

Patient Care, Clinical and Translational Research

I am pleased to report that the number of outpatient visits to physicians and the number of surgical procedures increased in fiscal year 2007.

General Otolaryngology Service

Under the direction of Dr. Gregory Randolph, the subspecialty areas of interest include the nose and paranasal sinuses, sleep apnea, and disorders of smell and taste. Drs. Stacey Gray, Eric Holbrook, and Nicolas Bu-Saba held a public forum on sinusitis in October 2007 in the Meltzer Auditorium. Dr. Holbrook taught an instructional course at the American Academy of Otolaryngology Head and Neck Surgery meeting in the area of olfaction, which was selected for online recording, an honor afforded only to a few instructional courses. Dr. Bu-Saba was elected to fellowship in the Triologic Society.

Thyroid and Parathyroid Surgical Service

Dr. Randolph chaired panels on thyroid and parathyroid surgery at the national American College of Surgeons meeting. He also participated as one of two surgeons speaking at the NIH Consensus Conference on fine needle aspiration held in October in Bethesda, Maryland.

Head and Neck Surgical Oncology Service

Dr. Derrick Lin serves as co-director of the MEEI/MGH Cranial Base Clinic. Dr. James Rocco, Director of the Head and Neck Molecular Oncology Research Laboratory, is heading up a Phase I trial of angiogenesis inhibitors for advanced head and neck malignancies as well as evaluating the molecular role of Bcl-2 in head and neck cancer. The Division recruited Dr. Kevin Emerick, whose specific interest is the management of cutaneous malignancies, including melanoma. The Norman Knight Hyperbaric Medicine Center continues as the foremost center of emergency and outpatient hyperbaric treatments in the Northeast and this year will begin a scholarly assessment of hyperbaric care for a variety of clinical diagnoses.

Laryngology Service and Voice and Speech Laboratory

Under the direction of Dr. Ramon Franco, the scope of care in the Division of Laryngology increased to include neurolaryngologic disorders affecting the voice with the recruitment of Dr. Phillip Song. A seminar for professional

right: *Dr. Gregory Randolph prepares for thyroid surgery with Peggy Kelley, R.N. Using Recurrent Laryngeal Nerve (RLN) monitoring, an electrical system he helped to develop, Dr. Randolph has significantly reduced complications after thyroid surgery at MEEI. He travels internationally, educating physicians in the use of this important technology.*

MEEI: CARING FOR THE GLOBAL COMMUNITY

Microtia (small ear) is a common birth defect in the indigenous population of the Andes. An average of three surgical procedures is required to repair microtia. Drs. Mack Cheney and Tessa Hadlock are part of a microtia team that has been helping children in Quito, Ecuador, for five consecutive years. The team performs reconstructive surgery as part of a group from the organization, Medical Missions for Children. MEEI residents have joined the teams as part of their training. MEEI researchers also collect data on surgical outcomes and family trees to enhance their knowledge of this rare hereditary condition. **Left:** *Dr. Hadlock visits a patient in the surgical holding area of the Fundacion Tierra Nueva Hospital.*

singers was held in March, and members of the service are involved in the instruction of speech-language pathology graduate students at Boston University. The Division has upgraded its diagnostic equipment to include digital capture of images from the outpatient area and operating rooms.

Facial Plastic and Reconstructive Surgery Service

Under the direction of Dr. Mack Cheney, the Division had a productive year. The Facial Nerve Center, under the direction of Dr. Tessa Hadlock, continued to grow with the addition of a physical therapist, Mara Robinson. Dr. Hadlock continued her NIH-funded research in the area of facial nerve regeneration. Drs. Cheney and Hadlock, Paulette Chesley, R.N., Laura Rykard and Missy Allen, as well as residents from the Department, participated in a Medical Missions for Children trip, providing reconstructive care for microtia, cleft lip and palate for people who otherwise would go untreated in South America. The Division also continued its collaboration with the R.O.S.E. Fund to provide surgical care to victims of domestic violence. Dr. Richard Gliklich published his findings in the area of minimally invasive facial surgery using intense ultrasound for facial rejuvenation. This work is being pioneered at the MEEI by Dr. Gliklich. Dr. Jessica Fewkes continued her work on Mohs surgery and is spearheading the development of a contemporary laser center in the areas of otolaryngology, dermatology and facial plastic surgery in conjunction with other members and divisions of the Department.

Pediatric Otolaryngology Service

Under the direction of Dr. Roland Eavey, the Division had a busy year. Its newest recruit, Dr. Don Keamy, is working with the Nurse's Health Study to analyze hearing loss data. Dr. Michael Cunningham continued his excellent job as Director of the Harvard Otolaryngology Residency program and serves as President of the American Society of Pediatric Otolaryngology. Dr. Leila Mankarious continued her research efforts into the molecular biology of the growth and development of the cricoid cartilage. Dr. Eavey continued his research efforts in the molecular genetics of sensorineural hearing loss and microtia. His work resulted in a publication in the New England Journal of Medicine in 2007 identifying a single gene defect as causative for several apparently disparate clinical phenotypes.

Otology, Neurotology, Audiology, Cochlear Implant Research Laboratory, and Vestibular Laboratory

Clinical members of the Otology/Neurotology Service have developed distinct subspecialty interests and strengths. Dr. Saumil Merchant, in conjunction with Dr. John Rosowki, continued his basic and translational research in the mechanics of the middle ear and also helped manage the National Temporal Bone Registry at MEEI. He was also selected as the Chair of an NIH-sponsored temporal bone consortium. Dr. Steven Rauch is a principal investigator of a multi-institutional, NIH-sponsored study of the management of sudden sensorineural hearing loss. I continued my work in the area of pathology of the inner ear, particularly the histologic correlates of cochlear implantation. Dr. Michael McKenna continued his work on the molecular biology of otosclerosis, and in conjunction with Drs. Sharon Kujawa, William Sewell and the Draper Laboratories, is helping to develop a drug-delivery system for the inner ear. Dr. Jennifer Smullen has a special interest in bilateral cochlear implantation and is working in collaboration with Dr. Don Eddington. Our newest recruit, Dr. Ron de Venecia, has a special interest in both clinical and translational research in the area of auditory brainstem implants for deaf patients who cannot benefit from conventional cochlear implants. We are pleased to announce the successful recruitment of Dr. Tina Stankovic, who will join the faculty in July 2008.

The Cochlear Implant Research Laboratory, under the direction of Dr. Eddington, is working on methods to improve the spatial selectivity of cochlear implant systems. The Jenks Vestibular Diagnostic Laboratory increased its clinical volume by 27% as compared to FY 2006. The laboratory was featured in an ABC News Primetime program concerning Mal de Debarquement syndrome. Drs. Conrad Wall, Daniel Merfeld and others continue to work on the wearable vestibular prosthesis, a device developed conjointly by MEEI and Draper labs.

Under the direction of Dr. Sharon Kujawa, the Department of Audiology continued to provide a high level of diagnostic and rehabilitative care to patients, both children and adults, at three clinical sites. Nerve monitoring services on the inpatient side has grown by 32% this year and newborn screenings at MGH by 6%. In addition to its busy clinical and research mission, the Division continues to provide teaching support to the Harvard/MIT program in Speech, Hearing, Bioscience and Technology and the MGH Institute of Health Professions.

Suburban Centers of Otolaryngology

The North Suburban Center for Otolaryngology in Stoneham, under the direction of Dr. David Nash, West Suburban Center for Otolaryngology at the Newton-Wellesley Hospital, under the direction of Dr. Mark Rounds, and the South Suburban Center for Otolaryngology in Quincy, under the direction of Dr. Paul Konowitz, continued to make significant contributions to the clinical life and outreach capabilities of the Department.

Basic Research

During the year several investigators were particularly successful in obtaining new funding to pursue research into the mechanisms of hearing and deafness:

> A major philanthropic gift led to the creation of a Center for Tinnitus Research and Patient Care under the leadership of Drs. Robert Levine and Jennifer Melcher.

> The Eaton-Peabody core grant was successfully renewed for a second five-year period under the direction of Dr. Charles Liberman, Director of the Eaton-Peabody Laboratory.

Honors, Awards and Recruits in the EPL

Dr. Christopher Shera received the 2007 Irving M. London Teaching Award, given each year by the Harvard MIT Division of Health, Sciences and Technology program in recognition of outstanding teaching of graduate students. Dr. John Guinan received the American Auditory Society Editor's award for outstanding research in audiology and the hearing sciences.

EPL trainees receiving awards include: Sasha DeVore, a graduate student, who was named as co-recipient of the Helen Carr-Peake Research Prize for 2007 for "outstanding bio-engineering research by an MIT undergraduate or graduate student;" and Dr. Darren Whiten, who was co-recipient of this award for his work in Dr. Eddington's laboratory. Dr. Fuxin Shi, a postdoctoral fellow with Dr. Albert Edge, received a Clinical Pilot Study Award from Harvard NeuroDiscovery Center for studies on the replacement of auditory neurons.

EYE TEAM PROVIDES COMPREHENSIVE CARE

The members of MEEI's Comprehensive Ophthalmology Services team (from left to right), Drs. Scott Greenstein, Matthew Gardiner (back), Stacey Brauner, Sherleen Chen, Carolyn Kloek and Sandra Cremers (not pictured), provide a full range of comprehensive eye care including prescriptions for eyeglasses, routine annual eye exams, and management of a variety of medical eye problems including cataracts, glaucoma, diabetic eye diseases and macular degeneration.

New Recruits in the EPL include Zheng-Yi Chen, Ph.D., and Dr. Tina Stankovic, as new investigators who have an interest in the molecular mechanisms underlying regenerative and degenerative processes in the inner ear. Dr. Chen was named to the "Scientific American 50," an annual list of outstanding leaders in science and technology, for his study of patterns of gene expression in the mammalian inner ear. Dr. Stankovic is the recipient of the Howard Hughes Medical Institute Postdoctoral Research Fellowship for Physicians.

Vestibular Physiology Laboratory

Dr. Dan Merfeld has brought to operational status the new research facility on the third floor of the connecting building. Dr. Merfeld was awarded a three-year NIH R01 grant to investigate the cues the brain uses to distinguish tilt from translational movement.

Education

We welcomed four new residents in Otolaryngology-Head and Neck Surgery and six new clinical fellows. This year saw several successful courses and symposia, including the 7th Annual Public Forum on Hearing and Balance, directed by the Department of Audiology, and the Surgery of the Thyroid and Parathyroid Glands course co-directed by Drs. Randolph, Randall Gaz and Richard Hodin.

Professional Staff

Congratulations to Dr. Saumil Merchant, who was named as the Eliason Professor of Otology and Laryngology, and to Dr. Albert Edge, who was promoted to the rank of Associate Professor.

Welcome to new members of the community-based staff: Drs. Rebecca Stone, Cecilia Tran, Elizabeth Willingham, James Alex, Jon and Wende Buras and Quinton Gopen.

The Department is grateful to its patients, staff and to the Board of Directors for their confidence, help and support for making this a successful year.

Joseph B. Nadol, Jr.

Joseph B. Nadol, Jr., M.D.
Chief of Otolaryngology

employee stars

JANUARY

Lisa Arma

Pharmacy

FEBRUARY

Mary Lou Butler, R.N.

Emergency Department

MARCH

Amanda Winstanley

Nursing Administration

APRIL

Phil Poulios

Human Resources

MAY

Janaelle DeAmato

Dietary

JUNE

Helen Young

Vestibular Laboratory

JULY

Antonetta Buccella, R.N.

Medical & Surgical, 11th Floor

AUGUST

An Ngo

Operating Room

SEPTEMBER

Tayne Tuitt

Operating Room

OCTOBER

Marilyn O'Brien

Refractive Surgery

NOVEMBER

Carol Lewis, M.D.

Medical & Surgical,
ENT Resident

DECEMBER

Pearl Icuspit, R.N.

Medical & Surgical, 11th Floor

2007 ANNUAL REPORT

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John Fernandez, President and CEO
Bruce Jordan, Vice President Development
Jennifer Street, Vice President Communications
Mary E. Leach, Director Public Affairs

Editorial Staff: Vannessa Carrington, Leslie Dennis, Suzy Donley, Ashley Salvato, Carlie Tacoma **Photography:** Eric Antoniou, Boston, MA, (www.ericantoniou.com), Tanit Sakakini, Public Affairs Staff **Design:** Marc Harpin, Rhumba, Chestnut Hill, MA **Printing:** Puritan Press, Hollis, NH

2007 statistics

Inpatient Hospital: 42 beds

DISCHARGES:

Eye Discharges	231
ENT Discharges	1,043
Total	**1,274**
Patient Days	4,481
Average Length of Stay	3.52

Surgical Procedures

INPATIENT SURGERY:

Eye Cases	165
ENT Cases	856
Total	**1,021**

AMBULATORY SURGERY:

Eye Cases	11,958
ENT Cases	6,827
Total	**18,785**
Total Surgical Procedures	**19,806**
Ambulatory Surgical Cases Utilizing Observation Service	2,886

Outpatient Department

OPHTHALMOLOGY:

Comprehensive Ophthalmology	19,118
Glaucoma	21,868
Cornea	11,425
Retina	26,760
Immunology	2,893
Neuro-Ophthalmology	6,626
Pediatric Ophthalmology and Strabismus	2,863
Eye Plastic	3,798
Electroretinography	5,234
Vision Rehabilitation	1,807
Contact Lens	4,308
Optical Shop	2,865
Methuen Center	N/A
Stoneham Center	1,911
Total	111,467

OTOLARYNGOLOGY:

Infirmary	66,004
Stoneham Center	12,176
Quincy Center	17,039
Wellesley Center	10,512
Total	**105,731**
Total Outpatient Visits	**217,207**

Emergency Room

Total Visits	**22,747**

Special Services

AUDIOLOGY DEPARTMENT:

Outpatient Visits	15,008
Hearing Aid Center	3,359
Evoked Response	1,375
Newborn Audiology Screenings	3,595

RADIOLOGY DEPARTMENT:

Conventional Exams	3,287
CT Scan	8,399
MRI	3,299

LABORATORIES:

Bacteriology (Cultures)	10,193
Clinical Lab (Procedures)	63,322
ENT Pathology (Specimens)	17,472
Eye Pathology (Specimens)	2,679
Frozen Section Laboratory	2,477
Electrocardiograms	3,527
Fluorescein Angiography	8,972
Occupational Therapy	1,544
Ultrasonography	7,859
Vestibular Laboratory	7,816
Voice and Speech Laboratory	12,503
Hyperbaric Oxygen Treatments	2,990

financial statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. - Combined Balance Sheet as of September 30, 2007

ASSETS

Current Assets	
Cash and Cash Equivalents	4,887,785
Short-Term Investments	1,511,992
Assets Whose Use is Limited Under Indenture Agreement (Required for Current Liabilities)	1,373,132
Patient Accounts Receivable (Less Allowance for Doubtful Accounts $3,031,772)	15,002,660
Other Current Assets	7,487,000
Total Current Assets	**30,262,569**
Assets Whose Use Is Limited	
Construction Fund	17,961,936
Special Cash Reserves	7,915,924
Funds Held for Research	4,504
Under Indenture Agreement	4,694,323
Total Assets Whose Use is Limited	**30,576,687**
Investments	106,054,929
Pledges Receivable, Net	2,662,047
Remainder Interest in Charitable Trusts	821,035
Beneficial Interest in Trusts	18,215,571
Property, Plant & Equipment (Net of Depreciation of $164,886,412)	82,436,797
Other Assets	
Intangible Assets (Net of Amortization of $1,383,667)	472,043
Deposits	1,192,200
Total Assets	**272,693,878**

LIABILITIES AND NET ASSETS

Current Liabilities	
Current Portion of Long-Term Debt and Capital Leases	5,516,687
Accounts Payable and Accrued Expenses	22,697,713
Accrued Interest	322,183
Estimated Third Party Settlements	3,045,591
Total Current Liabilities	**31,582,174**
Long-Term Debt, Less Current Portion	48,646,870
Asset Retirement Obligation	566,173
Accumulated Post-Retirement Benefit Obligation	241,571
Professional Liability Reserve	1,228,085
Accrued Pension Costs	511,473
Annuities and Unitrusts Payable	1,081,311
Total Liabilities	**83,857,657**
Net Assets	
Unrestricted for General Operations	53,216,005
Board Designated	36,436,515
Total Unrestricted Net Assets	**89,652,520**
Temporarily Restricted	49,520,673
Permanently Restricted	49,663,028
Total Net Assets	**188,836,221**
Total Liabilities and Net Assets	**272,693,878**

financial statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. - Combined Statement of Revenue and Expense of the General Funds as of September 30, 2007

NET PATIENT REVENUE

Net Patient Service Revenue	130,255,631

OTHER OPERATING REVENUE

(Including $26,489,787 from Research, Contributions and Grants)	51,075,789
Total Operating Revenue	**181,331,420**

OPERATING EXPENSES

Patient Care and Clinical	110,795,097
General and Administrative	41,117,115
Research	27,489,076
Fundraising	1,303,947
Education	2,271,838
Total Operating Expenses	**182,977,073**
Loss from Operations	(1,645,653)
Other Gains	3,465,324
Excess of Revenues Over Expenses	1,819,671
Other Support	2,624,791
Increase in Unrestricted Net Assets	**4,444,462**
Adjustment for Minimum Pension Liability	189,370
Cumulative effect of change in accounting principle	7,138,112
Total Increase in Unrestricted Net Assets	**11,771,944**
In addition, the Foundation received the following restricted funds income: Gifts and Bequests	4,238,902

INVESTMENT INCOME:

Interest and Dividends	(771,852)
Realized Gains on Investments	7,210,381
Unrealized Gains on Investments	2,783,370
Gain on Beneficial Interest in Trusts	1,784,437

A copy of the audited financial statements is available upon request from the Office of Public Affairs, (617) 573-3340.

left: *MEEI retina specialist Dr. John Loewenstein uses the hospital's newly acquired Pattern Scan Laser Photocoagulator (PASCAL), the newest laser treatment for diabetic retinopathy. The laser allows for faster, more precise and safer treatment, and provides a more comfortable experience for patients. Diabetic retinopathy is a leading cause of blindness in American adults and throughout the world.*

medical staff

Department of Anesthesiology

Chief of Anesthesiology

Salvatore J. Basta, M.D.

Clinical Director

Joseph Bayes, M.D.

Director of SurgiCenter Anesthesia

Artem Grush, M.D.

Director, Pediatric Anesthesia

Xiangwei (Shannon) Zhang, M.D.

Anesthesiologists

Jin W. Kim, M.D.
Nancy L. Gessner, M.D.
Janine T. Rodrigues-Saldanha, M.D.

Associate Anesthesiologists

Brian D. Blondin, M.D.
Rebecca J. Leong, M.D.
Ilya Malikin, M.D.
Anthony M. Sordillo, D.M.D.
Lily G. Tabbal, M.D.
Gabriele F. Troll, M.D. (until 12/07)
Peng Xiao, M.D.

Assistant Anesthesiologists

Maria M. Bortkiewicz, M.D.
Corey E. Collins, M.D.
Bil L. Ragan, M.D.
Sergei E. Razov, M.D.
Thomas W. Stinson, III, M.D.

Medical Unit

Medical Unit Director

Robert Hughes, M.D.

Medical Unit Staff

Ishir Bhan, M.D.
Andrew Chan, M.D.
Brian Chan, M.D.
Cynthia Cooper, M.D.
Carol Ehrlich, M.D.
Orlando Gutierrez, M.D.
Yariv Houvras, M.D.
Herbert Lin, M.D.
Hua (Jenny) Lu, M.D.
Tejas Patel, M.D.
Allan Pineda, M.D.
Elizabeth Speliotes, M.D.
Jatin Vyas, M.D.
Ramnik Xavier, M.D.
Patrick Yachimski, M.D.

Department of Ophthalmology

Chief of Ophthalmology

Joan W. Miller, M.D.

Associate Chief of Ophthalmology

John I. Loewenstein, M.D.

Ophthalmology Service Directors

Comprehensive Ophthalmology Service

Sherleen H. Chen, M.D., Director

Cornea and Refractive Service

Reza Dana, M.D., M.Sc., MPH., Director

Keratorefractive Surgery Division
Ocular Infectious Disease Unit

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Clinical Virology Service

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Emergency Department-Ophthalmology

Matthew Gardiner, M.D., Director

Glaucoma Consultation Service

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Louis R. Pasquale, M.D., Co-Director

Immunology-Uveitis Service

George Papaliodis, M.D., Director

Neuro-Ophthalmology Service

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David G. Cogan Ophthalmic Pathology Laboratory

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Anat Stemmer-Rachamimov, M.D., Associate Director

Ophthalmic Plastic Surgery Service

Aaron M. Fay, M.D., Acting Director

Pediatric Ophthalmology & Strabismus Service

Melanie Kazlas, M.D., Acting Director

Retina Service

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Morse Laser Center

Evangelos S. Gragoudas, Director

Electroretinography Service

Eliot L. Berson, M.D., Director

Macular Degeneration Unit

Joan W. Miller, M.D., Director

Trauma Service-Ophthalmology

Raymond Wee, M.D., Director

Vision Rehabilitation Service

Mary Lou Jackson, M.D., Director

EDUCATION

Residency Program Director

John I. Loewenstein, M.D.

Director of Medical Student Education

Simmons Lessell, M.D.

Director of Fellowship Training

Dean Cestari, M.D.

ACTIVE STAFF

Surgeons in Ophthalmology

Ann M. Bajart, M.D.
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Gary E. Borodic, M.D.
Robert J. Brockhurst, M.D.
Sheldon M. Buzney, M.D.
Romeo K. Chang, M.D.
Eugene C. Ciccarelli, M.D.
Reza Dana, M.D., M.Sc., M.P.H.
Claes H. Dohlman, M.D.
Thaddeus P. Dryja, M.D.
Richard P. Floyd, M.D.
C. Stephen Foster, M.D.
Anthony J. Fraioli, M.D.
Alexander R. Gaudio, M.D.
Andrew J. Gillies, M.D.
Evangelos S. Gragoudas, M.D.
Cynthia L. Grosskreutz, M.D., Ph.D.
Arthur S. Grove, M.D.
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Francis Sutula, M.D.
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Susan Wong, M.D.

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C. Douglas Evans, M.D.
Aaron M. Fay, M.D.
Macie Finkelstein, M.D.
Bradley S. Foster, M.D.
David Greenseid, M.D.
Debra Lynn Halpern, M.D.
David Hunter, M.D., Ph.D.
Mami A. Iwamoto, M.D.
Robert T. Lacey, M.D.
Richard Low, M.D.
Mary Jane McCarron, M.D.
Samir Melki, M.D.
Mei L. Mellott, M.D.
George Papaliodis, M.D.
Douglas Rhee, M.D.
Neal G. Snebold, M.D.
William G. Stinson, M.D.
Jeffrey L. Taveras, M.D.
Richard S. Weinhaus, M.D.
Janey Lee Wiggs, M.D., Ph.D.

Assistants in Ophthalmology

Adam Beck, M.D.
Fina Barouch, M.D.
Stacey Brauner, M.D.
Dean M. Cestari, M.D.
Audrey Chan, M.D.
Linda R. Dagi, M.D.
John Dagianis, M.D.
Marc Dinkin, M.D.
Alexandra Elliott, M.D.
Jyotsom Ganatra, M.D.
Matthew Gardiner, M.D.
Scott Greenstein, M.D.
Jo-Ann E. Haney-Tilton, M.D.
Mark P. Hatton, M.D.
David Hinkle, M.D.
Mary Lou Jackson, M.D.

Jody Judge, M.D.
Ula V. Jurkunas, M.D.
Murat Kalayoglu, M.D., Ph.D.
Melanie Kazlas, M.D.
Ivana Kim, M.D.
James Kirszrot, M.D.
Carolyn Kloek, M.D.
Daniel Laby, M.D.
Kameran Lashkari, M.D.
Raymond Magauran, M.D.
John Mandeville, M.D.
Margaret McLaughlin, M.D.
Steven Rhee, M.D.
Stephen Rostler, M.D.
Nilesh Sheth, M.D.
Lucia Sobrin, M.D.
Steven Stetson, M.D.
Jennifer Sun, M.D.
Angela Turalba, M.D.
Demetrios Vavvas, M.D., Ph.D.
Paul J. Wasson, M.D.
Raymond Wee, M.D.

Assistant Pathologist

Anat Stemmer-Rachamimov, M.D.

ASSOCIATE STAFF

Maida P. Antigua, M.D.
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Laura Fine, M.D.
Elliot M. Finkelstein, M.D.
Bradley Foster, M.D.
Bruce J. Gillers, M.D.
Ioannis Glavas, M.D.
Gerri Goodman, M.D.
David Z. Greenseid, M.D.
Neil Gross, M.D.
Jeffrey Heier, M.D.
James Hung, M.D.
Ernest Kornmehl, M.D.
Debra Kroll, M.D.
Magdalena Krzystolik, M.D.
James R. Lee, M.D.
M. Lisa McHam, M.D.
Mahnaz Nouri, M.D.
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Vincent J. Patalano II, M.D.
Donald W. Putnoi, M.D
Claudia U. Richter, M.D.
Ramy Rizkalla, M.D.
Thomas C. Smith, M.D.
Mitchell Strominger, MD
Nigel Timothy, M.D.
Felipe I. Tolentino, M.D.
Clement L. Trempe, M.D.
Lawrence E. Weene, M.D.
Carolyn Wu, M.D.
David Yi, M.D.

COURTESY STAFF

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A. Robert Bellows, M.D.
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Michael Chang, M.D.
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B. Thomas Hutchinson, M.D.
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Nabil I. Jarudi, M.D.
Eddie Kadrmas, M.D.
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Vicki Kvedar, M.D.
Brent Lambert, M.D.
Marc Leibole, M.D.
Joseph J. Levy, M.D.
Howard Marton, M.D.
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J. Wallace McMeel, M.D.
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Kambiz Neghaban, M.D.
Dale Oates, M.D.
Robert A. Petersen, M.D.
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Michael B. Raizman, M.D.
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Peter Rapoza, M.D.
Elias Reichel, M.D.
Martin Richler, M.D.
James W. Rosenberg, M.D.
Jason Rothman, M.D.
Perry Rosenthal, M.D.
Deborah Schlossman, M.D.
Sabera T. Shah, M.D.
Bradford Shingleton, M.D.
Jill A. Smith, M.D.
Sarkis H. Soukiasian, M.D.
Ernest A. Sutcliffe, M.D.
William M. Tang, M.D.
Gerald Tanguilig, M.D.
John V. Thomas, M.D.
Trexler Topping, M.D.
Clement Trempe, M.D.
Kailenn Tsao, M.D
Stewart J. Turner, M.D.
James Umlas, M.D.
Kuldip K. Vaid, M.D.
George A. Violin, M.D.
Richard Weinhaus, M.D.
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Stephen A. Youngwirth, M.D.
Deborah E. Zuckerman, M.D.

EMERITUS STAFF

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Jack F. Bowers, M.D.
Harry Braconier, M.D.
Richard Dallow, M.D.
George Garcia, M.D.
John R. Gehring, M.D.
Firmon E. Hardenbergh, M.D.
Philip J. Harris, M.D.
Roland Houle, M.D.
David Hutchison, M.D.
Robert Kinder, M.D.
Eeva-Liisa Martola, M.D.
Peter B. Mooney, M.D.
George Olive, M.D.
Bernard Schwartz, M.D., Ph.D.
John G. Sebestyen, M.D.
Richard J. Simmons, M.D.

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Ephraim Friedman, M.D.
Irving L. Pavlo, M.D.
Alfred W. Scott, M.D.
Paul F. Vinger, M.D.

CONSULTING STAFF

Lloyd M. Aiello, M.D.
David Miller, M.D.
Richard Robb, M.D.

ASSISTANT STAFF

Assistants in Ophthalmology/ Clinical Fellows

Sarah Acevedo Roman, M.D.
Christopher Andreoli, M.D.
Kenneth Chang, M.D.
Joseph Ciolino, M.D.
Mohammed Dastjerdi, M.D.
Alexander Demidenko, M.D.
Daniel Esmaili, M.D.
Theodoros Filippopoulos, M.D.
Pankaj Gupta, M.D.
Rola Hamam, M.D.
Pedram Hamrah, M.D.
Helene Lam, M.D.
Szilard Kiss, M.D.
Kristine Tan Lo, M.D.
Kathryn Masselam, M.D.
Shashidhar Murthy, MBBS, MS
John Nguyen, M.D.
Marena Patronas, M.D.
Vasiliki Poulaki, M.D.
David Rubaltelli, M.D.
Amit Todani, M.D.
Corey Westerfeld, M.D.

Residents

Audrey Ahuero, M.D.
Nicole Benitah, M.D.
Grace Chang, M.D.
Jason Comander, M.D.
Jessica Ciralsky, M.D.
Knut Eichhorn-Mulligan, M.D.
Hani Salehi-Had, M.D.
Gena Heidary, M.D.
Ben Kim, M.D.
Nancy Kim, M.D., Ph.D.
Kristina Kurbanyan, M.D.
Yannek Leiderman, M.D.
Ann-Marie Lobo, M.D.
Kenneth Mandell, M.D.
Sandra Montezuma, M.D.
Lynn Poole Perry, M.D.
Saadia Rashid, M.D.
Jullia Rosdahl, M.D.
Erin Salcone, M.D.
Aaron Savar, M.D.
Ankoor Shah, M.D.
Rebecca Stacy, M.D.
Tasha Tanhehco, M.D.
Aisha Traish, M.D.
Angela Turalba, M.D.

RESEARCH LABORATORIES

Angiogenesis Laboratory

Evangelos S. Gragoudas, M.D., Co-Director
Joan W. Miller, M.D., Co-Director

Berman-Gund Laboratory for the Study of Retinal Degenerations

Eliot L. Berson, M.D., Director

Howe Laboratory

Joan W. Miller, M.D., Acting Director
Janey L. Wiggs, M.D., Ph.D., Associate Director

Laser Laboratory

Evangelos S. Gragoudas, M.D., Co-Director
Joan W. Miller, M.D., Co-Director

MEEI/SERI Joint Clinical Research Center

Kathryn A. Colby, M.D., Ph.D., Director

Ocular Molecular Genetics Institute

Margaret DeAngelis, Ph.D., Director

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RESEARCH FACULTY

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Reza Dana, M.D., M.Sc., M.P.H.

Margaret DeAngelis, Ph.D.
Alexander R. Gaudio, M.D.
Evangelos S. Gragoudas, M.D.
Cynthia L. Grosskreutz, M.D., Ph.D.
Ali Hafezi-Moghadam, M.D., Ph.D.
Tatjana Jakobs, Ph.D.
Ula Jurkunas, M.D.
Ivana Kim, M.D.
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Kayoung Yi, M.D., Ph.D.
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Department of Otolaryngology

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Victor Calcaterra, M.D.
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John B. Lazor, M.D.
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Pathologist
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Quinton S. Gopen, M.D.
Richard E. Mugge, M.D.
Vijay K. Nayak, M.D.
Roger C. Nuss, M.D.
Rebecca S. Stone, M.D.
Ceceila V. Tran, M.D.
Elizabeth S. Willingham, M.D.

Consultant in Allergy and Immunology
Johnson Wong, M.D.
Consultant in Dermatologic Surgery
Oon T. Tan, M.D.
Consultants in Hyperbaric Medicine
Jon Buras, M.D.
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David A. Peak, M.D.
Robert L. Sheridan, M.D.
John R. Sims, M.D.
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Consultant in Pediatric Surgery
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Sheldon Sevinor, M.D.
Jonathan Schuster, M.D.
Jonathan Winograd, M.D.
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Consultant in Thyroid Surgery
Randall D. Gaz, M.D.

COURTESY STAFF

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Jose D. Angeles, M.D.
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Peter S. Ambrus, M.D.
Bruce R. Gordon, M.D.
Ely A. Kirschner, M.D.
Assistant Surgeons
Fred G. Arrigg, M.D.
Stuart H. Bentkover, M.D.
Bjorn Bie, M.D.

Thomas A. Chasse, M.D.
Terry J. Garfinkle, M.D.
James P. Hughes, M.D.
Joshua L. Kessler, M.D.
Charles J. Leidner, M.D.
R. William Mason, M.D.
Richard A. Moss, M.D.
Joseph H. Oyer, M.D.
Kathryn A. Ryan, M.D.
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Stephen A. Smith, M.D.
H. Dennis Snyder, M.D.

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Harsha V. Gopal, M.D.
Craig A. Jones, M.D.
William S. Postal, M.D. (LOA)
Pratik Pradhan, M.D.
Robert A. Stern, M.D.

Consultants in Oral/Maxillofacial Surgery

Meredith August, M.D., D.M.D.
John Buehler, M.D., D.M.D.
Carol Lorente, D.M.D.

Consultants in Plastic Surgery

Richard A. Bartlett, M.D.
Jonathan A. Hall, M.D.

HONORARY STAFF

Surgeons

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Richard R. Gacek, M.D.
Edward J. Glinski, M.D.
C. Edward Jackson, M.D.
Parviz Janfaza, M.D.
Roy A. Johnson, M.D.
Thomas R. Klein, M.D.
Robert E. Klotz, M.D.
John M. Kurkjian, M.D.
Thomas A. Mulvaney, M.D.

Associate Surgeon

William G. Lavelle, M.D.
Alfred D. Weiss, M.D. (Neurology)

EMERITUS STAFF

Surgeons

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Robert H. Freedman, M.D.
Alfred L. Hurst, M.D.
Donald A. Keamy, M.D.
Joseph A. Moretti, M.D.
David L. Pierce, M.D.
John C. Trakas, M.D.

Associate Surgeon

Usama S. Hamdan, M.D.

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Aurore Brugeaud, Ph.D.
Zhiqiang Chen, M.D., Ph.D.
Tao Cheng, Ph.D.
Masato Fujioka, M.D., Ph.D.
Csilla Haburcakova, Ph.D.
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Faisal Karmali, Ph.D.
Dave Langers, Ph.D.
Chang Ho Lee, M.D.
Jeffery Lichtenhan, Ph.D.
Efrain Martinez, M.D.
Sudeep Mukerji, M.D.
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Elif Ozdemir, Ph.D.
Mark Parker, Ph.D.
Marcello Peppi, Ph.D.
Maria de Lourdes Quintanilla-Dieck, M.D.
Fuxin Shi, M.D.
Jennifer Shin, M.D.
Hisashi Tokano, Ph.D.
Haobing Wang, M.S.
Jingbing Xue, M.D., Ph.D.

Clinical Fellows

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Ritvik P. Mehta, M.D.
Douglas D. Reh, M.D.
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Enoch M. Sanders, M.D.
J. Andrew Sipp, M.D.
Konstantina M. Stankovic, M.D.

Residents

Aaron C. Lin, M.D.
Matthew T. Lister, M.D.
Michael G. Moore, M.D.
Jennifer J. Shin, M.D.
Carol M. Lewis, M.D.
Anthony C. Nichols, M.D.
W. Matthew White, M.D.
Cory C. Yeh, M.D.
Wade Chien, M.D.
Shelby C. Leuin, M.D.
Andrew R. Scott, M.D.
Joshua B. Silverman, M.D., Ph.D.
Harrison W. Lin, M.D.
Hien T. Nguyen, M.D.
Alicia M. Quesnel, M.D.
Aaron M. Wieland, M.D.
Margo M. Benoit, M.D.
H. Heidi Nakajima, M.D.

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Auditory Evoked Response

Robert Levine, M.D., Medical Director

ENT Emergency Service

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Daniel G. Deschler, M.D., Director

Norman Knight Hyperbaric Oxygen Unit

Daniel G. Deschler, M.D., Director

Intermediate Care Unit

Daniel G. Deschler, M.D., Director

Jenks Vestibular Diagnostic Laboratory

Richard E. Lewis, M.D., Medical Director

Laryngology Service

Ramon A. Franco, Jr., M.D., Director

MGH/MEEI Cranial Base Center

Derrick T. Lin, M.D., Co-Medical Director

Medical Student Education

Steven D. Rauch, M.D., Coordinator
Daniel G. Deschler, M.D., Associate Coordinator

Otolaryngologic Pathology Service

Ben Z. Pilch, M.D., Director

Otology Service

Joseph B. Nadol, Jr., M.D., Director

Pediatric Otolaryngology Service

Roland D. Eavey, M.D., Director

Sinus Center

Salah D. Salman, M.D., Director

Thyroid and Parathyroid Surgery Division

Gregory W. Randolph, M.D., Director

Voice and Speech Laboratory

Glenn Bunting, M.S., Clinical Director
Ramon A. Franco, Jr., M.D., Medical Director

RESEARCH STAFF

Amelia Peabody Otoimmunochemistry Laboratory

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Audiology

Chris Halpin, Ph.D.
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Clinical Outcomes Research Unit

Richard E. Gliklich, M.D., Director

Cochlear Implant Research Laboratory

Donald K. Eddington, Ph.D., Director
Joseph Tierney, S.M.

Eaton-Peabody Laboratory of Auditory Physiology

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M. Christian Brown, Ph.D.
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Stephane Maison, Ph.D.
Jennifer R. Melcher, Ph.D.
William T. Peake, Ph.D.
Katharina Rosengarth, Ph.D.
Christopher Shera, Ph.D.
Mark Tramo, M.D., Ph.D.
Susan Voss, Ph.D.
Thomas F. Weiss, Ph.D.
F. Ishmael Stefanov-Wagner, Research Support Engineer

Inner Ear Biophysics Unit

Ruth Anne Eatock, Ph.D.

Neurochemistry Unit

William F. Sewell, Ph.D.

Tillotson Unit

Albert Edge, Ph.D.

Wallace Middle Ear Research Unit

Saumil N. Merchant, M.D.
John J. Rosowski, Ph.D.

Electron Microscopy Laboratory

Charles M. Liberman, Ph.D., Director

Jenks Vestibular Laboratory

Conrad Wall III, Ph.D., Director

Jenks Vestibular Physiology Laboratory

Daniel M. Merfeld, Ph.D., Director

Molecular Oncology Research Laboratory

James W. Rocco, M.D., Ph.D., Director

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Saumil N. Merchant, M.D., Director
Clarinda C. Northrop

National Temporal Bone, Hearing and Balance Pathology Resource Registry

Saumil Merchant, M.D., Co-Director
Joseph B. Nadol, Jr., M.D., Co-Director

Department of Radiology

ACTIVE STAFF

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Michael H. Lev, M.D.
James D. Rabinov, M.D.
Ashwini Mysore, M.D. (until 5/07)
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Laura Vitale Romo, M.D.
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Clinical Associate in Radiology

Jeanne D. Keller, M.D.

Clinical Associate in Radiology

Herman D. Suit, M.D.

EMERITUS STAFF

Consultant in Radiotherapy

Milford Schulz, M.D.

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John Fernandez
General Counsel
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Vice President Human Resources
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Vice President Finance
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Vice President Business Development
Lisa Putukian
Vice President Ophthalmology
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Vice President Otolaryngology
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Vice President Facilities & Planning
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Chief Financial Officer MEEA
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1997 Vincent Vitto
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1998 Renée M. Landers
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1999 Peter C. Aldrich
1999 Samuel Altschuler
1999 Nancy Jo Altschuler
1999 Andrew C. Culbert
1999 JoAnne Dickinson
1999 Gerard F. Doherty
1999 Richard L. Kobus
1999 Dr. Jacqueline W. Libergott
1999 John H. Marenghi
1999 Suzanne Murray
1999 Eugenia "Gene" Seamans
1999 Wat Tyler
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2000 Georgette Boucai
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right: *Drs. Eric Holbrook and Stacey Gray are working together to develop MEEI's new Sinus Center, which will use the latest advances to provide the best care to patients suffering from diseases of the nose and sinuses, facilitate research in this specialty, and utilize seminars, courses and lectures to impart MEEI's mission to medical students, residents, physicians and researchers from the United States and abroad.*

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2007 Reynolds Society Dinner Celebrates Patient Care Around the World

MEEI marked the 21st Annual Reynolds Society Dinner and Achievement Awards gala on Friday, Nov. 2, 2007 at the Fairmont Copley Plaza Hotel. The event, named for MEEI co-founder Dr. Edward Reynolds, honors friends who contribute $2,500 or more to MEEI in a given fiscal year (Oct. 1 to Sept. 30). This year's dinner celebrated the difference that MEEI physicians, trainees and researchers make in improving the lives of people throughout the world. The elegant evening included poignant presentations to the Reynolds Society Achievement Awardees, the Ineraid Cochlear Implant Research Subjects, whose selfless dedication to MEEI's ongoing research on Ineraid cochlear implants has made a better quality of life possible for hearing-impaired people around the world. Dr. Claes H. Dohlman was honored with the first-ever Global Leadership Award. Dr. Dohlman is considered the father of the cornea subspecialty and a pioneer in the care and research of the cornea. Emmy award-winning broadcast journalist Peter Mehegan was master of ceremonies. The 2008 Reynolds Society Dinner will take place on Nov. 13 at the InterContinental Boston. For more information about joining the Reynolds Society, contact Melissa Paul at 617-573-4168.

Above: *Donald K. Eddington, Ph.D., Director of the MEEI Cochlear Implant Research Laboratory, presented the 2007 Reynolds Society Achievement Awards to the Ineraid Cochlear Implant research subjects. Pictured from left to right: Joan Robin, John Dumphy, Ann Collins, Tom McDonald, Joan Allen, John Anderson, Deborah Sinkis, Donald Eddington and Mark Meacham.*

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Unrestricted giving allows the Massachusetts Eye and Ear Infirmary (MEEI) to respond flexibly to immediate priorities. To encourage unrestricted philanthropy at the leadership level, MEEI has established a special recognition group within the Reynolds Society known as The 1824 Circle. Membership is reserved for friends who make unrestricted gifts of $12,500 or more during the fiscal year. MEEI thanks the following 1824 Circle members for their gifts made Oct. 1, 2006 through Sept. 30, 2007.

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Diane E. and Albert J. Kaneb
Christopher P. Kauders
Mary Kearney
Jonathan and Judy Keyes
Mrs. Hans J. Kroto
Shaun and Kathleen Levesque
Helen and Robert Lindstrom
Patricia and Richard MacKinnon
Mrs. Joseph Marconi
Mary T. Marshall
Mr. and Mrs. Thomas J. McCormick
Tom and Sharon McDonald
Bernadine McInnis
Mrs. August R. Meyer
Melvyn Miller
Mildred D. Molter
Suzanne and Terry Murray
Karen J. Ness
Mrs. Louville Niles
Elinor F. O'Brien
Genevieve O'Brien
Bob and Dot Palenius
Melissa Paul
Mrs. Abraham Pollen
Bernadine and Nicolas Ponticelli
Mrs. Nelson O. Price
Mr. and Mrs. George J. Rabstejnek
Phyllis G. Redstone
Seymour Robins
Jerome and Elaine Rosenfeld
Mr.* and Mrs. Ernest J. Sargeant
Ann Sargent
Barry and Aviva Scheur
David W. Scudder
Dr. * and Mrs. Earl S. Seale
Gene and Bob Seamans
Peter H. and Frances L. Seidenberg
Roberta W. Siegel
Gordon H. Silver
Dr. Herbert Silverstein
William F. Spang
Paul M. Steiner
Mr. * and Mrs. Robert T.P. Storer, Jr.
Margaret and Jim Sullivan
Mr. and Mrs. Lawrence T. Sullivan
Mary C. Taylor
Adrienne and John* Thompson
Frederick G.P. Thorne
Gerard B. Townsend, Jr.
Polly J. Townsend
Mr. and Mrs. David J. Tucker
Erika R. Verbeck
Nancy V. Weare
F. Blair Weille
Stetson Whitcher
Don and Randi Wilson
Susan Woodard
Barry and Patricia Yellen
Mrs. Charles T. Young, III
Anonymous (33)

---

* *Deceased*

Dedicated to Serving the Global Community

Roughly 900 international patients from 93 foreign countries traveled to the MEEI in 2007 for second opinions and treatment. The hospital served patients as close as Canada and Bermuda and as far as Tajikistan (Central Asia) and Mauritania (Northwest Africa). Why do foreign patients travel to MEEI? A physician from Italy explained: "Thanks to the International Office staff and to the institution, my patient has started enjoying every single moment of her everyday life." A 5-year-old boy from Guatemala was able to hear his parents' voices for the first time, thanks to cochlear implant surgery at MEEI. The International Office staff also assisted Dr. Gregory Randolph in the preparation of MEEI's first live video conference, during which Dr. Randolph delivered a presentation on minimally invasive thyroid surgery to the IV Brazil Conference in San Paulo. Without leaving the office, MEEI physicians were able to educate medical professionals thousands of miles away. MEEI is dedicated to serving and educating the global community.

Massachusetts Eye and Ear Infirmary

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www.meei.harvard.edu

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5 Promises

MASSACHUSETTS EYE AND EAR INFIRMARY **ANNUAL REPORT 2008**

5 Promises

Highest Quality Patient Care: We strive to deliver the highest quality of patient care possible and to improve care and treatment for patients around the world.

Patient Access and Service Excellence: We plan to make access to outstanding care easier for a wide range of patients and to provide the best healthcare experience possible for our patients and our employees.

Research and Academic Leadership: Our vision is to be the world leader in developing research advances and training future leaders in our specialties.

Financial Health: To accomplish our mission, we will work together to strengthen our financial performance, so that Mass. Eye and Ear will thrive for generations to come.

Community Outreach: Our commitment to serve the community will not waver, whether it be around the corner or around the world.

on the cover: Hannah Couture's life was saved by an innovative surgery to remove a mass blocking her airway.

the Promise of Mass. Eye and Ear

By all measures, this was a successful year for the Massachusetts Eye and Ear Infirmary. As always, we put intense focus on taking care of our patients, finding new cures and treatments for the conditions they face, and training the outstanding young physicians who will become the world's leading specialists in ophthalmology and otolaryngology.

In 2008 we also began to implement a strategic plan for Mass. Eye and Ear that is focused on both growth and service excellence. We watched our chiefs and senior leaders skillfully guide their departments through one of the busiest years in the hospital's history. And we are not finished yet.

John Fernandez, President & CEO

In just the last few months, we announced new leadership teams in several areas, including quality of care, strategic network development, and surgical and clinical management. We opened a fourth suburban site, launched a new website, and worked to create new friendships, while strengthening those already established.

In our last annual report we introduced you to our guiding principles: the pillars on which we are expanding the foundation of Mass. Eye and Ear. Throughout this annual report, we hope to give you greater insight into those pillars, because they are our five promises to you.

In the pages that follow you will learn that:

- Mass. Eye and Ear is moving forward to develop a program that will set the standard for quality of care and outcomes in our specialties.

- Basic and clinical research at Mass. Eye and Ear leads to new cures, new treatments and a better quality of life for our patients and for patients around the world.

- Mass. Eye and Ear physicians are teaching and mentoring the best and the brightest young minds in our specialties.

- Beyond improvements to our physical facility, we hope to provide physicians, nurses, caregivers and technicians with leading-edge technology that will ensure the best care for our patients.

- We are taking steps to improve our patients' access to our doctors and to our facilities, while also elevating the level of service for all who seek our treatment.

Additionally, this report will focus on our efforts to ensure financial health for the organization for many years to come. 2008 saw a marked increase in both surgical volume and patient visits, thanks mainly to the recruitment of new physicians and a renewed focus on improving systems, processes and service. That, in turn, led to a better bottom line and new investment in our mission and in our future. This news is deeply encouraging, especially as we prepare to negotiate the challenges of the current economic climate.

I would like to offer my thanks to our board of directors, led by Chair Diane E. Kaneb, for their support and guidance during the last year, as well as the clinical leaders of Mass. Eye and Ear: Joan W. Miller, M.D., Chief of Ophthalmology; Joseph B. Nadol, Jr., M.D., Chief of Otolaryngology; Hugh D. Curtin, M.D., Chief of Radiology; and Thomas Stinson III, M.D., Acting Chief of Anesthesiology. To read the Chiefs' full reports, please visit www.MassEyeAndEar.org.

Our deepest thanks go to you — our friends — who honored us with a very strong fundraising year in 2008. Your generosity signals to us your belief in our mission: to excel in caring for patients; to find cures for the diseases we treat; and to put forth into the world a new generation of medical leaders. It would simply not be possible without your gifts, which you will read more about later in this issue. Admittedly, we need your friendship now, more than ever. We hope that you will seek more information about the mission of Mass. Eye and Ear and perhaps help to spread the word about the depth and range of our services. A good place to start is our new website: www.MassEyeAndEar.org. If we can return the favor and be of service to you, do not hesitate to call me.

John Fernandez
President & CEO

right: Dr. James Chodosh examines Sister Patricia Malone of the Congregational Sisters of St. Joseph (Brighton, Mass.).

STEVEN
RAUCH MD
ENT
Steven D. Rauch, M.D.

Highest Quality Patient Care

• *While pregnant with her first child, Dalal Alholi's vision became threatened by glaucoma. After Dr. Douglas Rhee performed sight-saving surgery, she gave birth to a healthy little girl who she could see clearly.* • *As a radio talk show host, Gerry Callahan depends on his voice as his livelihood. Threatened with losing it forever, he was treated by Dr. Ramon Franco, who preserved his vocal cords and his distinctive sound.* • *When Meniere's disease sent Jonathan Haar's life into a tailspin, he sought out the care of Dr. Steven Rauch, who was able to help him regain his balance.*

Each day, we hear the stories of people whose lives have been changed by the physicians and nurses at the Mass. Eye and Ear. We have no greater priority at Mass. Eye and Ear than to provide our patients with the highest quality of care.

To help lead us in this effort, we created a Board-level committee to support robust quality care, service excellence and patient satisfaction. We also appointed Quality and Outcomes champions. Christopher Hartnick, M.D., and Teresa Chen, M.D., are serving as Physician Quality Leaders. They are working directly with Carol Covell, Executive Vice President of Quality Care and Chief Nursing Officer, and share responsibility for quality activities at all Mass. Eye and Ear locations. Richard Gliklich, M.D., assumed the formal role in developing outcomes measures and reporting for Mass. Eye and Ear as an organization. He will work closely with the quality team to monitor our existing quality of care as well as set and communicate the standards for clinical outcomes and quality of care in our specialties. These leaders will help us continue to lead the way in providing the highest quality patient care.

left: Dr. Steven Rauch tests Christine Denning's balance.

CREATING AN ENVIRONMENT OF EXCELLENCE

High quality care and a high-quality environment go hand in hand. This year we made great strides in our plan to transform and expand the Mass. Eye and Ear surgical facilities. The Best Operating Rooms by 2010 project will improve the lives of our patients, and also of our surgeons and nurses, by providing a physical environment that facilitates total focus on quality of care. We welcomed Jeff Pike as Vice President, Surgical Services, and Gayle Fishman as Vice President, Clinical Services, to help in this transformation that goes far beyond physical renovation. We are grateful for the work of more than a dozen surgeons, anesthesiologists, nurses and managers who now meet weekly to focus on implementation of our OR plans. Some of the anticipated improvements include:

- Leading-edge technology at the fingertips of surgeons, anesthesiologists and nurses;
- Communications systems to create efficient scheduling and exchange of information;
- Quick and efficient check-in procedures for our patients;
- Fewer multi-floor transports and elevator rides.

Construction and renovation projects in several areas are well underway, with completion of the new Radiology Department and the new Vision Rehabilitation suite. These projects help pave the way for the Best ORs by 2010 construction project, which will begin shortly. We look forward to reporting more about this in next year's annual report.

In addition, we added new services and renovated existing ones. In Ophthalmology, the Eye Pathology Service was renovated. A third outpatient suite in the Retina Service was equipped. The North Suburban Center was enhanced with comprehensive ophthalmology services and a wider range of specialty care. We began offering telecom retinal imaging and evaluation at MGH's Chelsea Health Center. In Otolaryngology, we began development of a new Sinus Center and Otolaryngology Laser Center.

Mass. Eye and Ear physicians are recognized as international leaders in their fields. Our surgeons, nurses, clinicians and researchers have set the standard for quality care. Improving our facilities is one of the many ways to enable our outstanding team to thrive in the years to come.

LEVERAGING TECHNOLOGY

Providing the highest quality of care also means utilizing new equipment and technology. We were pleased to add a variety of equipment and technology including two new Stratus OCT-3 systems installed at our North Suburban Center and Glaucoma Service, main campus; a Topcon Non-mydiratic digital imaging system installed at MGH Chelsea Health Center; a Heidelberg Retina Tomograph 3 (HRT3) in association with the Rostok cornea module, a new type of laser confocal microscope, in the Cornea Service, main campus; a Retcam II wide field portable digital imaging system for retinal imaging in Pediatric Retina, Neuro-Ophthalmology, Retina and Glaucoma Services; a PASCAL (Pattern Scan Laser) Photocoagulator System in the Laser Center; a new Pentacam Camera in Refractive Surgery; and a new Intraocular Lens Master, used to calculate lens implants for cataract surgery, in Comprehensive Ophthalmology.

QUALITY REVIEW AND PATIENT SATISFACTION

Measuring how we are doing is an important part of our continuous effort to enhance the quality of care for our patients. This year we had our first unannounced Joint Commission Survey. The team once again recognized Mass. Eye and Ear's outstanding quality of service and clinical care. The surveyors were deeply impressed with our continued readiness, our teamwork, our communication, our professionalism, and our clinical care.

We also measure surgical patients' satisfaction via Press Ganey, a survey service. Last year more than 90 percent of patients who had surgery here said they would recommend the hospital to others. Our nurses and other staff routinely receive high marks. We are working to maintain the satisfaction rate when high, but we recognize that there is always room for improvement. In 2009 we hope to expand these surveys to patients in our clinics.

LOOKING TO THE FUTURE

The highest standard of quality care is the goal we set for ourselves. As we grow patient and surgical volume, and expand our reach into new communities, we strive to maintain and expand our leadership position in quality of care, patient safety and promoting our clinical outcomes. This year we laid the groundwork. Our promise to you is that we will continue to do whatever is necessary to provide the highest quality of care to enable people like Mrs. Alholi, Mr. Callahan and Mr. Haar to live their lives to the fullest.

right: Pediatric Nurse Ann Tirrell visits with Hannah.

1

Quality of Care

> *"How do you thank someone for saving your baby's life?"*
>
> *— Katrina Couture, Mother of Hannah*

HANNAH'S STORY

When Dr. Chris Hartnick saw the ultrasound, he knew a tiny life was about to have a difficult entry into the world. A large mass was blocking the baby's airway. So Dr. Hartnick, a pediatric otolaryngologist, led a remarkable feat during the C-section birth. With just the baby's head out of the womb, he established a working airway. Later, he performed a separate surgery to remove the mass. Now, after a year of care at Mass. Eye and Ear, Hannah Couture is a healthy little girl whose infectious smile lights up every room she enters.

Patient Access and Service Excellence

"The nurses on the 10th floor are angels. Always nearby, but giving us our space. They attended to my child's, my family's, and my needs with grace. They were professional, but treated us like family."
— mother of a pediatric patient

There is nothing more important than the care and service we provide our patients. Mass. Eye and Ear has taken major steps toward achieving our goals to make it easier for patients to seek our care and to provide a gold-standard level of service.

NEW STAFF ADDITIONS

Excellent care begins with our doctors. Our chiefs successfully recruited 14 new physicians across a broad spectrum of services within our specialties. These additional physicians and surgeons help ease long wait times and add to the collaborative quality of specialty care at Mass. Eye and Ear.

In 2008 the Department of Otolaryngology welcomed Jaimie DeRosa, M.D., Allan Goldstein, M.D., Daniel Lee, M.D., David Lesnik, M.D., and Konstantina Stankovic, M.D., Ph.D. The Department of Ophthalmology welcomed Sheila Borboli-Gerogiannis, M.D., Kenneth Chang, M.D., James Chodosh, M.D., Douglas Evans, M.D., Pedram Hamrah, M.D., Deborah Jacobs, M.D., Samir Melki, M.D., and Frank Sutula, M.D. The Department of Radiology welcomed Amy Juliano, M.D.

GROWTH AND EXPANSION

In addition to growing the medical staff, improving access means bringing our high quality of specialty care to the areas where our patients live.

The president and the chiefs announced several appointments to better focus on the expansion of clinical services outside of our Charles Street campus.

Paul Konowitz, M.D., and Douglas Rhee, M.D., were named Medical Directors of Strategic Network Development. In addition to their many duties throughout the organization, Drs. Konowitz and Rhee are now working in close conjunction with Mike Souza, hired to the newly created position of Vice President, Network Development.

This team is taking the lead on developing strategic relationships and alliances in order to promote Mass. Eye and Ear's clinical programs throughout a broad geographic area.

SUBURBAN OUTREACH

A great example of the tremendous effort and teamwork that goes into expanding our reach is the planning and launch of Mass. Eye and Ear's newest clinical site at the Southeast Medical Center on Route 18 in East Bridgewater. The site is beautiful and convenient for many patients living south of Boston.

---

left: Olga Levy, Lead Patient Services Coordinator in Comprehensive Ophthalmology, provides prompt and efficient customer service with a smile.

Mass. Eye and Ear, East Bridgewater, offers a full range of otolaryngology and audiology services. In ophthalmology, we are collaborating with Eye Health Services to provide general eye care, while Mass. Eye and Ear physicians provide subspecialty care for glaucoma, retina and eye plastics.

Additionally, we continue to grow at Mass. Eye and Ear's established suburban sites in Quincy, Stoneham and Newton. Otolaryngology is thriving in all three areas and our ophthalmology practice is rapidly growing in Stoneham.

MASSEYEANDEAR.ORG

Mass. Eye and Ear's website has been completely redesigned with a new focus on patients and referring physicians. Most of the content is the work of our own physicians and clinicians. With many new tools for patients, we hope the site will make it easy for our patients to learn about our physicians, our services and our locations.

FOCUS ON SERVICE

In addition to physician recruitment, Mass. Eye and Ear has committed both people and resources to create a better patient experience, from that very first phone call to the final post-op checkup. Included in this effort:

- Our team of experts used practice management data to analyze and redesign physicians' master schedules. This effort will result in improved patient flow through our busy clinics. Focus has now turned toward improving our phone systems.

- The installation and implementation of Mass. Eye and Ear's new hospital-wide computer system has allowed us to greatly improve systems for registering patients, accessing supplies, improving efficiency in the surgical center and tracking data.

- A Mass. Eye and Ear Directory of Referral Services was sent to 15,000 physicians throughout greater New England. A printable, electronic version is posted on our website.

- We are developing new employee training programs to ensure every staff member is equipped with the necessary skills to offer prompt, efficient and friendly customer service.

While many of these improvements are based on technology, the bottom line is that they improve the lives of our patients. For instance, visitors to the Charles Street campus no longer need to carry a blue card or check in at central registration. They can receive all of their radiology services in one area: a magnificent new imaging center on the hospital's ground floor. If patients wish to pre-register or pay their bill on-line, they may do so from the comfort of their home. They can access Google Maps™ for directions to any of our locations, with just a click on the new website's homepage. And patients can give us direct feedback about the care and service they receive.

These are small examples but they have a large impact in the busy lives of our patients. Our goal is clearly stated on the homepage of our new website: that every patient in need of our services has a great experience with world-class care and the best outcome possible.

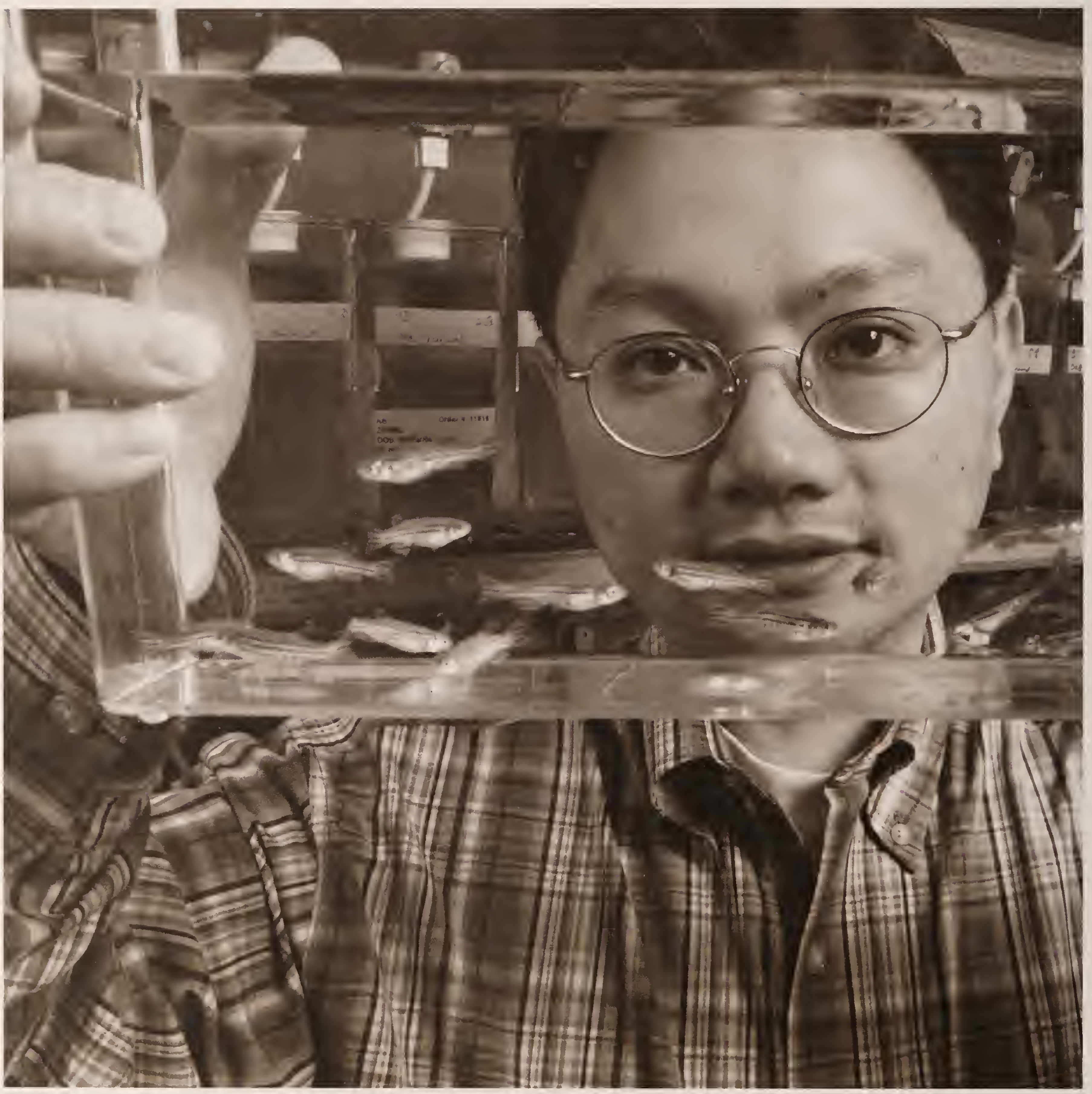
right: Audiologist Donna Hultman assesses Antoinette Kelton's hearing at Mass. Eye and Ear, East Bridgewater.

2 Access & Service

> *"I feel compelled to write to tell you how extraordinary I believe your hospital and employees to be. It goes beyond words — how caring and supportive your team is."*
>
> *— patient letter*

EAST BRIDGEWATER CAMPUS

We are delighted to announce that Mass. Eye and Ear, East Bridgewater, is now open. Located in the Southeast Medical Center on Route 18 in East Bridgewater, Mass., this beautiful new clinic offers a full range of care in otolaryngology and audiology, as well as ophthalmology services in retina, glaucoma and eye plastics. (And the parking is free!) To read about services in East Bridgewater and our other suburban locations in Quincy, Milton, Weymouth, Newton and Stoneham, visit MassEyeAndEar.org.



Research and Academic Leadership

Dr. Dan Deschler shared a conversation he had with his young son. Eight-year-old Jack was trying to reconcile the fact that while his dad treats people with cancer, he is also helping to find a cure for the disease. Jack expressed concern that when the cure is found, his dad might be out of work. Dr. Deschler assured Jack that they could live with that outcome.

Young Jack made a good point. While Mass. Eye and Ear staff treat the diseases and conditions that affect our patients' lives, we also work relentlessly to cure them, and through our teaching, to spread that knowledge around the world. Below are some examples of Mass. Eye and Ear's academic and research excellence in fiscal year 2008.

ADVANCING RESEARCH

In a challenging and competitive grant environment, our researchers were able to secure more than $14.6 million in grants in fiscal year 2008 to support their work, which is a testament to the high caliber of our research programs. Some research successes this year include:

- New treatment for dry eye using a topical drop application of a fatty acid;
- New insights into underlying genotypes in development of some types of glaucoma;
- Elucidating the effect of environmental factors in development and progress of glaucoma;
- Enhanced understanding of certain genotypes and development and progression of AMD (age-related macular degeneration);
- A new research study, Dr. Michael Cunningham's "Surgical reduction of the inferior turbinate using a coblation device for treatment of nasal obstruction," with ArthroCare; and
- Recruitment of Zheng-Yi Chen, Ph.D., to study the molecular biology of the ear.

Our appreciation to the individuals, foundations and organizations that support our research efforts. Your support is needed now more than ever and we appreciate all that you do to advance science at Mass. Eye and Ear.

We congratulated all of our colleagues at the Eaton-Peabody Laboratory (EPL) on the occasion of the EPL's 50th anniversary. For a half century, the EPL has exemplified Mass. Eye and Ear's mission by leading the world in basic hearing research and teaching to improve care and treatment for

left: Dr. Zheng-Yi Chen performs research into the molecular biology of the ear by studying zebrafish.

people with hearing loss, to restore hearing, and, ultimately, to find cures for patients around the globe. Additionally, the EPL's collaboration with Mass. Eye and Ear, Massachusetts Institute of Technology, Mass. General Hospital and Harvard Medical School creates a unique pathway for the world's most renowned auditory researchers and academicians to join together and work as one to accelerate progress.

ACADEMIC LEADERSHIP

In addition to conducting research to find better treatments and cures, our physicians are also teaching the medical professionals of tomorrow. We are pleased to note two appointments to named professorships. Congratulations to Reza Dana, M.D., M.P.H., M.Sc., Claes Dohlman, M.D., Professor in Ophthalmology, and to Charlie Liberman, Ph.D., Harold F. Schuknecht Professor of Otology and Laryngology. John Guinan, Ph.D., and Steven Rauch, M.D., were both promoted to Professor of Otology and Laryngology.

EDUCATIONAL HIGHLIGHTS

We also held several courses that drew faculty and attendees from all over the world. The fourth annual Cataract Course, offered to rising third-year residents throughout the United States, drew 115 participants; 45 faculty were drawn from resident teaching programs throughout the country. The Ophthalmology Annual/Alumni Meeting featured the Mariana Mead Lecture, Distinguished Alumni Awards and Lectures, and a day and a half of didactic presentations on clinical, basic research and translational research topics. In April we held courses on the "Endoscopic Surgery of the Sinuses and Eustachian Tube," "An Update on Pediatric Airway, Voice and Swallowing," "An Update in Head and Neck Cancer," and "Surgery of the Thyroid and Parathyroid Glands."

Our faculty won many awards and prizes this year.

- Claes H. Dohlman, M.D., Ph.D., was named 2007 Academy Laureate by the American Academy of Ophthalmology. Dr. Dohlman was also awarded the Leslie Dana Gold Medal for the Prevention of Blindness by the St. Louis (MO) Society for the Blind and Visually Impaired.

- Additional 2007 American Academy of Ophthalmology recognition: Senior Achievement Award – Joseph F. Rizzo, III, M.D. Achievement Award – Kathryn Colby, M.D., Ph.D., and Douglas Rhee, M.D. Service Recognition Award – Reza Dana, M.D., M.P.H., M.Sc.

- Dean Cestari, M.D., and Stacey Gray, M.D., won Norman Knight Leadership Development Awards.

- Mary Lou Jackson, M.D., was appointed Chair of the Low Vision Rehabilitation Committee of the American Academy of Ophthalmology.

- Douglas Rhee, M.D., received a Physician Scientist Award from Research to Prevent Blindness and a Mid-Career Award from the American Glaucoma Society.

- Lucia Sobrin, M.D., received a Career Development Award from Research to Prevent Blindness.

- Tiansen Li, Ph.D., received the Board of Directors' Award from Foundation Fighting Blindness for advances in Usher Syndrome research.

right: Dr. Ula Jurkunas performs research to find better treatments for Fuchs' Endothelial Corneal Dystrophy, which is one of the most common causes of blindness from corneal swelling and the second most common cause of corneal transplants done in the United States.

3

Research & Academics

> *"Dr. Claes Dohlman has proved the exemplar of excellence for generations of ophthalmologists who have carried his standards throughout the world."*
>
> *— Dr. Arthur Boruchoff, in tribute to Dr. Dohlman, who received Mass. Eye and Ear's Global Leadership Award*

PERSONALIZED MEDICINE

Too much time in the sun playing golf and tennis without a hat left Ray Kelsey with a growth on his eye that required surgery. When the growth returned, Dr. Reza Dana, whose research includes stopping corneal blood vessel growth and corneal inflammation, had a solution that did not involve more surgery. After gaining appropriate approval, he worked with the hospital pharmacy to formulate special eye drops. Ray has used the drops for several weeks. The regrowth has completely resolved and not returned, helping him avoid additional surgery.

- Reza Dana, M.D., M.P.H., M.Sc., won a 2008 Alcon Research Institute Award.

- Five ophthalmology residents, our Chief Resident, and a retinal fellow won 2008 Heed Fellowships (Residents Jessica Ciralsky, Gena Heidary, Ben Kim, Yannek Leiderman; Chief Resident Raymond Wee; Retina Fellow Daniel Esmaili).

- Dr. Simmons Lessell, M.D., was a nominee for the 2008 Harvard Medical School Faculty Prize for Excellence in Teaching.

- Pedram Hamah, M.D., was awarded a 2008 Harvard Clinical Scientist Fellowship, funded through the K-12 grant program, which provides protected research time for clinicians wishing to establish themselves as clinician-scientists. Two other Mass. Eye and Ear faculty — Lucia Sobrin, M.D., Retina, and Ula Jurkunas, M.D., Cornea — are also K-12 awardees.

- Daniel Deschler, M.D., was nominated for the 2007 Harvard Medical School Faculty Prize for Excellence in Teaching.

- Sasha Devore, Ph.D., received the Helen Carr Peake Research Assistantship.

- Stacey Gray, M.D., won the Montgomery Award of Excellence in Teaching, given by the graduating residents.

- Joseph Nadol, Jr., M.D., was elected President of the American Otological Society and received the Shambaugh Prize in Otology from the Collegium Oto-Rhino-Laryngologicum Amicitiae Sacrum for outstanding scientific contributions to inner ear research.

- Anthony Nichols, M.D., was awarded the Jeffrey P. Harris M.D., Ph.D., Prize for Excellence in Research by a Graduating Resident and the Chief Resident Teaching Award.

- Adrian Priesol, M.D., won the 2008 fellowship from the Eleanor and Miles Shore 50th Anniversary Fellowship program for Scholars in Medicine at Harvard Medical School.

- Gregory Randolph, M.D., received a letter of merit from Governor Deval Patrick for his outstanding and dedicated commitment to the field of thyroid oncology and surgery and a Certificate of Merit from the America Academy of Otolarynology — Head and Neck Surgery for directing a delegation to Russia to meet with leaders in Otolaryngology.

- Chris Shera, Ph.D., received the Irving M. London Teaching Award given by the Harvard MIT Division of Health Sciences.

NURSING EXCELLENCE

Our physicians and researchers are not alone in their pursuit of academic excellence. Mass. Eye and Ear nurses have received honors as well. Congratulations to Belinda Van Tassell, R.N., Linda Godefroi, R.N., and Sandra Pullen, R.N., B.S.N. Their posters took top prizes at the Society of Otorhinolaryngology and Head-Neck Nurses Annual Symposium. Pauline Wright, R.N., M.S., M.Ed., Eileen Gunderson, R.N., Sylvia Dodge-Palomba, R.N., and Debbie Rich, R.N., B.S.N., all presented papers at the American Society of Ophthalmic Registered Nurses.

We are proud of the scientists and educators whose work sets Mass. Eye and Ear apart. We look forward to the cures that they discover and to the accomplishments of the future teachers in our specialties.

Financial Health

"We don't want to survive; we want to thrive."
John Fernandez, President & CEO

Thriving has become a lofty goal in this economic downturn. But we know it is still attainable. Our clinics and operating rooms (ORs) remain busy and our staff has never worked harder to serve patients. Here at Mass. Eye and Ear, we know that "busy is good."

CLINICAL OPERATIONS

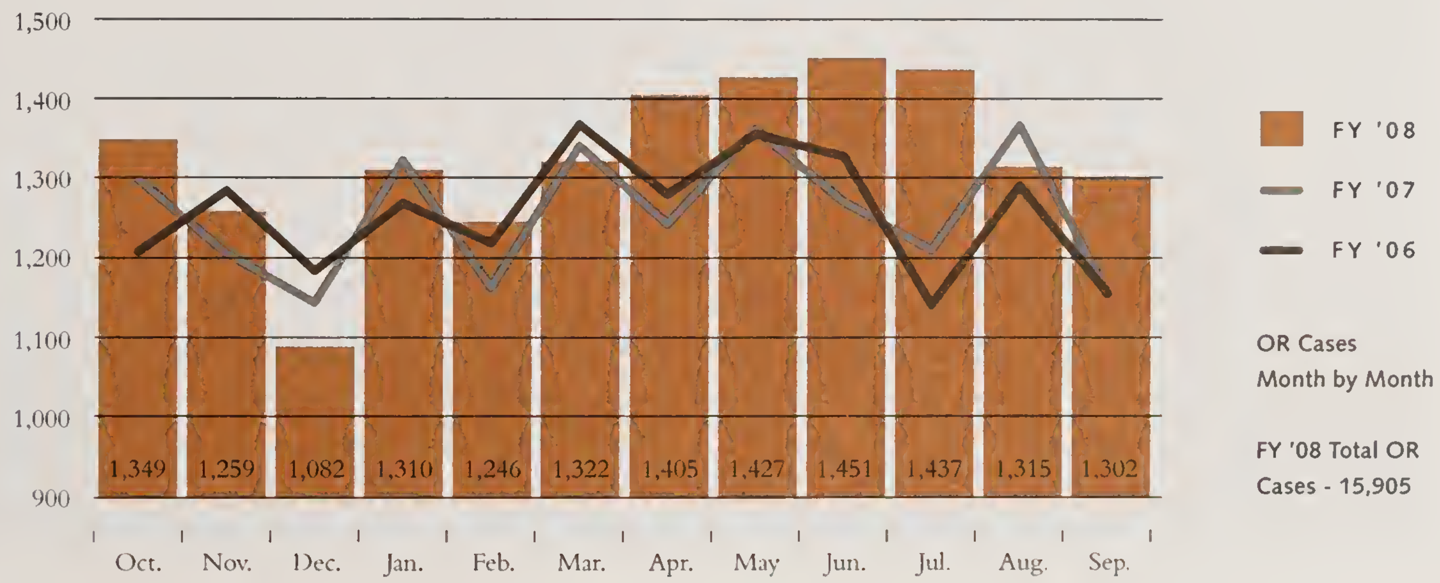
Thanks to a tremendous effort by surgeons, anesthesiologists, nurses and support staff in our ORs and clinics, we saw encouraging growth in surgical volume, up five percent in FY '08. Our inpatient discharges increased by double digits and we saw explosive growth in outpatient services, with more than a quarter million services performed in our clinics and emergency department.

We are pleased with the results you will read on the financial pages of this report, but as we brace for another difficult year in the financial markets, it is critically important that Mass. Eye and Ear remains disciplined in growing operational revenue and managing expenses.

RESEARCH

The federal funding environment for research initiatives remained challenging in 2008. Mass. Eye and Ear investigators did a remarkable job to increase funding totals from the previous year.

SURGICAL CASES MONTH BY MONTH



OR Cases
Month by Month

FY '08 Total OR
Cases - 15,905

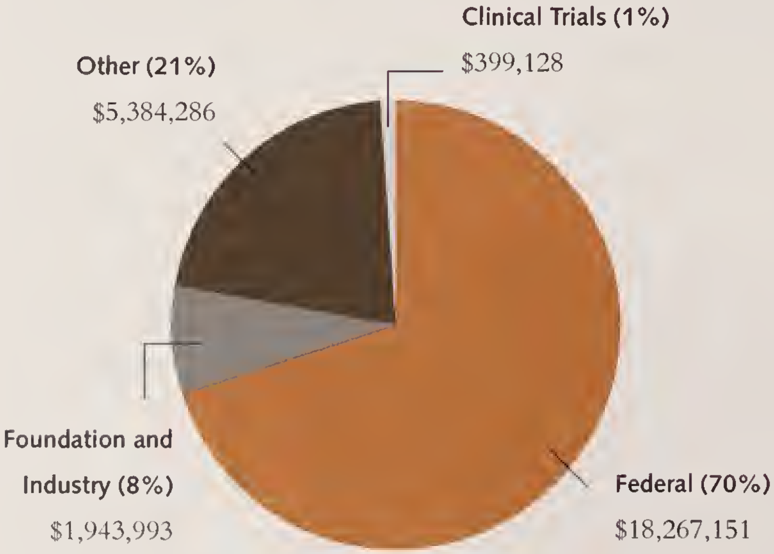
COMBINED RESEARCH EXPENDITURES BY DEPARTMENT

(Direct and Indirect)

	FY 2007	FY 2008
Ophthalmology	$10,341,983	$12,247,055
Otolaryngology	$13,281,548	$13,747,504
Total	$23,623,531	$25,994,559

COMBINED RESEARCH COSTS BY SOURCE

(Direct and Indirect)



PHILANTHROPY

This is our most exciting story for the year. Even as times got tough, our generous friends helped us achieve one of the best philanthropic years in the history of Mass. Eye and Ear, kindly making gifts totaling $13.2 million.

Led by the generosity of our board chair, Diane E. Kaneb and her husband, Al Kaneb, membership in the Reynolds Society grew to 478, helping to achieve more than $2 million in unrestricted giving. Our Boston Marathon runners — Team Eye and Ear — overachieved, surpassing their goal and raising more than $200,000. Almost $11 million was given to our physicians and scientists in order to help them reach their ambitious goals more quickly — finding cures, new treatments, and new methods of prevention and healing for the diseases and disorders that affect our patients.

Gifts like:

- An anonymous foundation grant of $2.9 million to support research and teaching at the Eaton-Peabody Laboratory and the Facial Nerve Center;
- A planned gift of $1.3 million from Marjorie and Philip Gerdine to establish a fellowship in ophthalmology;
- A gift of $1 million from Diane E. and Al Kaneb to support the Centers for Surgical Care at Mass. Eye and Ear;
- A gift of $500,000 from the Tillotson Corporation to expand the Louise and Neil Tillotson Laboratory;

4 Financial Health

SURGICAL VOLUME

Inpatient surgical services total:	1,148
Ambulatory surgical services total:	20,032

OUTPATIENT DEPARTMENTS

Eye services total:	126,885
ENT services total:	114,812

Emergency Department services total:	21,142

Inpatient:	42 beds
Total Discharges:	1,432

THE FUTURE OF QUALITY CARE

The Mass. Eye and Ear surgical team signed scrubs that were framed and presented to Board Chair Diane E. Kaneb in appreciation of her gifts to support the Best ORs by 2010 program. Diane and her husband, Al Kaneb, made gifts that will help to transform and expand the hospital's surgical facilities. The new facilities will set the standard for modern ambulatory operating rooms and help propel the hospital into the future.

Thanks Much
M.E.E.I.
Pat Fisk
Many Thanks

MASSAC
YE & E
FIRMA

- A pledge of $450,000 from Claire and John Bertucci for the Thyroid and Parathyroid Center of Excellence;

- An anonymous pledge of $450,000 to support research in hearing restoration;

- Grants from Research to Prevent Blindness totaling $320,000 for ophthalmology research;

- A pledge of $300,000 to support Dr. Reza Dana in cornea translational research from the Tamra Gould and Howard Amster II Philanthropic Fund of the Jewish Community Federation of Cleveland;

- A pledge of $300,000 from the Hamilton H. and Mildred H. Kellogg Charitable Trust to support hearing research at the Eaton-Peabody Laboratory;

- A pledge of $250,000 from John and Rita Cannistraro to support the research of Dr. Cynthia Grosskreutz in glaucoma;

- A pledge of $250,000 from Michael and Betsy Dingman for continued support of the Dingman Fellowship in Head and Neck Surgical Oncology; and

- A pledge of $200,000 from Frederick and Ines Yeatts to support the research of Dr. Zheng-Yi Chen in hearing.

To everyone who has made a gift to Mass. Eye and Ear: you have our deepest gratitude and sincere thanks.

left: Mass. Eye and Ear has been standing strong since 1824.

Community Outreach

"I would like to thank everyone at Mass. Eye and Ear for seeing the kids from the West End House. The outlook for these children just got a whole lot better. It is hard to give it your best if your vision is holding you back. The vision obstacle has just been removed for them."

— Alan Cregg, Vision Coalition Massachusetts

The Massachusetts Eye and Ear Infirmary was founded in 1824 as a one-room charitable clinic to treat those in the Boston community who needed eye care. While Mass. Eye and Ear's services have expanded since then, our commitment to serving the community continues to be a cornerstone of our mission.

Last year Mass. Eye and Ear physicians, nurses and others performed community service activities that included screenings, lectures, free care and participation in health fairs, both at home and in other parts of the world.

Last year Mass. Eye and Ear was invited to provide Vision Screenings at Camp Harbor View on Long Island in Boston. The camp opened in 2007 at the request of Mayor Menino and provides children living in Boston with a supportive and structured summer environment. Camp Harbor View serves more than 600 children from Boston's at-risk neighborhoods. We will return to the camp in the summer of 2009 to provide more screenings. In addition, the South Suburban Center staff provided vision screenings to South Elementary School pre-school students in Stoneham, Mass. Amy Scally, O.D., and staff are working with the school to plan a return visit this year.

Mass. Eye and Ear once again provided pediatric vision and hearing screening to our "adopted" school, the Neighborhood House Charter School (NHCS) in Dorchester, Mass. The NHCS is home to 400 students ages 4 to 14 and serves a diverse community of Boston children. Vision screenings and any needed follow-up care is under the direction of Melanie Kazlas, M.D., Director of Pediatric Ophthalmology. Hearing screenings and needed follow-up care are coordinated by Donna Hultman, M.S., senior audiologist.

When it comes to community service, collaboration is key. Mass. Eye and Ear collaborated with the Vision Coalition to provide full eye exams for children in the after-school program at the West End House Boys and Girls Club in Allston, Mass. In a clinic coordinated by Kimberley Chan, O.D., and staffed by residents, 14 boys and girls received full eye examinations free of charge at Mass. Eye and Ear. Those children who needed eyeglasses received a free pair of eyeglasses

right: Mass. Eye and Ear collaborated with Vision Coalition Massachusetts to provide eye exams and glasses to children from the West End House Boys and Girls Club in Allston, Mass.

5

Community Outreach

> *"The outlook for these children just got a whole lot better."*
>
> *— Alan Cregg, Vision Coalition Massachusetts*

GLOBAL REACH WITH A LOCAL HEART

Mass. Eye and Ear's medical reach extends internationally, but its services also embrace communities closer to home. Every year Mass. Eye and Ear employees, from physicians to administrative staff, volunteer their time to communities in the Boston area. Together, they provide education and screenings in our specialties for many people who would not otherwise have access to these services.

courtesy of Vision Coalition Massachusetts and the Mass. Eye and Ear Optical Shop. Mass. Eye and Ear physicians also collaborated with several groups including local Lions Clubs to provide screenings in various locations in the community.

In addition, we held on-site head and neck cancer screenings. Our nurses administered flu vaccines at the State House as part of a collaboration with the Council of Boston Teaching Hospitals and nearly 500 people received free flu shots as a part of this program. Our physicians participated in the Children's Chernobyl Project to provide children in the Chernobyl region with care. We also continued our ongoing collaboration with the Regaining One's Self Esteem (R.O.S.E.) Fund to provide reconstructive surgery for abused and battered women and children.

Educational events included the "Have You Heard" Public Forum on Hearing and Balance and the Public Forum on Sinusitis. We also raised awareness and provided lectures and screenings at the Diabetes Expo/Health and Fitness Expo. Our medical staff provided lectures and helped to facilitate regular meetings of the Glaucoma Support Group and Facial Nerve Support Group.

Further away, Drs. Roberto Pineda, Cornea Service, and Jared Ament, Cornea Research Fellow, established the first Africa-based clinic for the Boston Keratoprosthesis in Addis Ababa, Ethiopia. Our otolaryngology staff held an Ear Education Day in conjunction with Children's Hospital of Mexico City.

left: Mass. Eye and Ear provided vision screenings to students at Camp Harbor View.

Our commitment to community service is unwavering. For a complete list of our community service activities or to suggest how we can better serve the community, please visit MassEyeAndEar.org.

Financial Statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. - Combined Balance Sheet as of September 30, 2008

ASSETS

Current Assets	
Cash and Cash Equivalents	2,728,964
Short-Term Investments	2,274,653
Assets Whose Use is Limited Under Indenture Agreement	1,420,505
Patient Accounts Receivable (Less Allowance for Doubtful Accounts $3,323,354)	17,714,662
Other Current Assets	9,226,094
Total Current Assets	**33.364,878**
Assets Whose Use Is Limited	
Construction Fund	14,371,230
Special Cash Reserves	7,221,579
Funds Held for Research	1,247,609
Under Indenture Agreement	4,670,720
Total Assets Whose Use is Limited	**27,511,138**
Investments	97,656,416
Pledges Receivable, Net	2,450,355
Remainder Interest in Charitable Trusts	378,836
Beneficial Interest in Trusts	14,518,465
Property, Plant & Equipment (Net of Depreciation of $175,369,333)	85,849,159
Other Assets	
Intangible Assets (Net of Accumulated Amortization of $1,470,610)	385,098
Deposits	1,250,800
Total Assets	**263,365,145**

LIABILITIES AND NET ASSETS

Current Liabilities	
Current Portion of Long-Term Debt and Capital Leases	7,302,255
Accounts Payable and Accrued Expenses	27,894,489
Accrued Interest	341,542
Estimated Third Party Settlements	2,232,863
Total Current Liabilities	**37,771,149**
Long-Term Debt, Less Current Portion	41,288,165
Asset Retirement Obligation	589,215
Accumulated Post-Retirement Benefit Obligation	242,111
Professional Liability Reserve	1,196,067
Accrued Pension Costs	11,876,598
Annuities and Unitrusts Payable	1,005,679
Total Liabilities	**93,968,984**
Net Assets	
Unrestricted for General Operations	45,246,288
Board Designated	35,030,055
Total Unrestricted Net Assets	**80,276,343**
Temporarily Restricted	41,497,568
Permanently Restricted	47,622,250
Total Net Assets	**169,396,161**
Total Liabilities and Net Assets	**263,365,145**

Financial Statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. - Combined Statement of Revenue and Expenses of the General Fund as of September 30, 2008

NET PATIENT REVENUE

Net Patient Service Revenue	144,981,284
Other Operating Revenue (Including $29,707,472 from Research, Contributions and Grants)	54,466,698
Total Operating Revenue	**199,447,982**

A copy of the audited financial statements is available upon request from the Office of Public Affairs, (617) 573-3340.

OPERATING EXPENSES

Patient Care and Clinical	122,348,465
General and Administrative	42,795,440
Research	29,955,176
Fundraising	1,377,016
Education	2,334,173
Total Operating Expenses	**198,810,270**
Income from Operations	637,712
Other Gains	1,626,038
Excess of Revenues Over Expenses	**2,263,750**
Other Support	(1,656,389)
Increase in Unrestricted Net Assets	**607,361**
Adjustment for Pension and Postretirement-related charges other than net periodic pension cost.	(9,983,538)
Decrease in Unrestricted Net Assets	**(9,376,177)**
In addition, the Foundation received the following restricted funds income: Gifts and Bequests	6,599,566
Investment Income:	
Interest and Dividends Net of Expense	(1,187,087)
Realized Gains on Investments	2,694,311
Unrealized Loss on Investments	(6,982,706)
Loss on Beneficial Interest in Trusts	(3,697,106)

Employee Stars

January
John Kuhns
Facilities

February
Monika Kamdar
ENT

March
Anthony Soto
Shipping and Receiving

April
Terri Kinlin
Ophthalmology

May
Yolande S. Soloman
Emergency Department

June
Justin Gonzalez
Central Registration

July
Michael Mykytyn
Research Administration

August
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Communications

September
Ethel Hargrove
Dietary

October
Lois Slattery
Comprehensive Ophthalmology

November
Sandra DeCelle
Billing

December
Olga Levy
Comprehensive Ophthalmology

Benefactors

The Reynolds Society

Named in honor of Edward Reynolds, M.D. (1793-1881), co-founder of the Massachusetts Eye and Ear Infirmary, the Reynolds Society was established in 1986 to recognize those special friends who contribute at a leadership level during the fiscal year. Mass Eye and Ear thanks the following Reynolds Society members for their gifts and pledges of $2,500 or more from Oct. 1, 2007 through Sept. 30, 2008. Senior hospital-based medical staff and senior managers who give $2,000 or more, and other hospital-based medical staff and employees who give $1,000 or more, are also recognized as Reynolds Society members.

INDIVIDUALS

Gifts of $1,000,000 or more

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Diane E. and Albert J. Kaneb

Gifts of $500,000 - $999,999

Claire and John Bertucci

Gifts of $100,000 - $499,999

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2008 Annual Report

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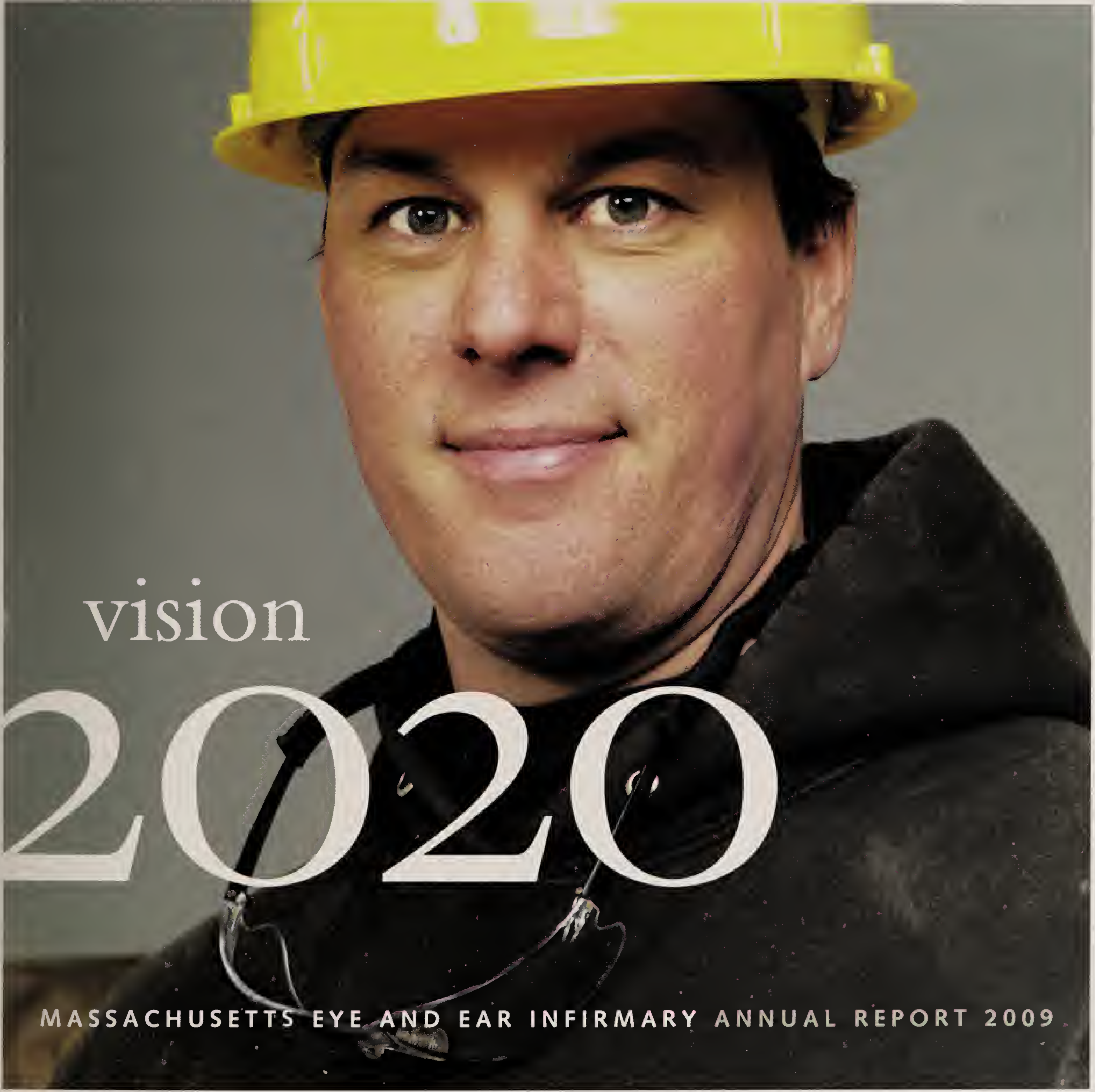

vision 2020

MASSACHUSETTS EYE AND EAR INFIRMARY ANNUAL REPORT 2009

vision 2020

People

Recruit and retain the world's finest physicians, researchers, nurses, caregivers, managers and staff.

Growth

Expand the breadth of services we offer and the number of people we treat to improve our clinical outcomes, to expand our clinical research base, and to produce a financial margin to reinvest in our clinical, research and teaching mission.

Access

Make Mass. Eye and Ear's world-class care available to those who need it, in locations that are convenient for their lives, whether they live in Boston, Bangor or Beijing.

on the cover: Joe Wright's vision was saved by emergency surgery that repaired a cut in his eye.

vision 2020: looking to the future

Dear Friends,

Although 2009 presented many economic challenges throughout Boston and the nation, Mass. Eye and Ear soared to new heights in all aspects of its mission.

First and foremost, we delivered on the 5 Promises of Mass. Eye and Ear: Highest Quality Care, Access for Patients and Service Excellence, Academic and Research Leadership, Financial Health and Community Outreach.

Now we turn our focus to the future. The Board of Directors has approved a 10-year strategic plan. We call it Vision 2020. It is a plan to invest in people, growth and access, by recruiting the best and brightest physicians, scientists and clinicians from around the world. Vision 2020 also includes an ambitious renovation and expansion of our hospital and a plan to build a new research center on our Boston campus. We have already launched our strategy for Mass. Eye and Ear to provide Eye and ENT services for other hospitals and healthcare providers, through collaboration and partnership in Greater Boston, throughout the U.S., and the world.

In the pages that follow, you'll learn more about our newly formalized collaboration with Massachusetts General Hospital, as well as our new agreements to provide services for Brigham and Women's Hospital, Braintree Rehabilitation Hospital, and our unique partnership with Children's Hospital.

Other key successes in 2009 include:

- The recruitment of Dr. Sunil Eappen to serve as Mass. Eye and Ear's Chief of Anesthesia;
- The recruitment of more than a dozen physicians and scientists to the full-time faculty;
- Mass. Eye and Ear and the Department of Ophthalmology prevailing in the nearly decade-long litigation with the pharmaceutical company, QLT Inc.;
- The launch of Mass. Eye and Ear's Outcomes publication project;
- The launch of Mass. Eye and Ear's new external website.

We have begun 2010 with more good news: a new Board Chair to lead us through our next decade of growth and innovation. I would like to extend a warm welcome to Wyc Grousbeck and to offer my deep personal gratitude and thanks to Diane E. Kaneb for her leadership, counsel and dedication.

None of this success would be possible without our entire Board of Directors, our chiefs, our great staff and you — the friends of Mass. Eye and Ear. Your continued support of our mission is meaningful and deeply appreciated. On behalf of the entire staff of Mass. Eye and Ear, I thank you and look forward to our continued friendship.

Sincerely,

John Fernandez, President and CEO

new leadership and collaboration

NEW LEADERSHIP

The Board of Directors proudly announces a new Chair of the Massachusetts Eye and Ear Foundation and Infirmary: Wycliffe "Wyc" Grousbeck, co-owner and CEO of the Boston Celtics.

Wyc is uniquely tied to our mission of medical research and teaching. Motivated by his son's blindness, Wyc and his family have been devoted to research and educational initiatives relating to blindness and other conditions for many years. Wyc founded and co-directs a genetic therapy research project targeting CEP-290 related blindness, involving 10 leading medical institutions and 18 prominent medical researchers (four of whom are Howard Hughes Investigators). His family was honored to endow the Grousbeck Professorship in Pediatric Hematology/Oncology at the Harvard Medical School, currently held by Dr. Leonard Zon.

Additionally, Wyc has a breadth of knowledge as a successful businessman and the architect of the 2008 champion Celtics. He holds a bachelor's degree in history from Princeton University (1983), a law degree from the University of Michigan (1986), and an MBA from Stanford Business School, where he was a Miller Scholar (1992).

The last several years have been invigorating for Mass. Eye and Ear, with the hiring of a new President and CEO; the launch of Mass. Eye and Ear's strategic plan; unprecedented growth in patient volume and research revenue; a major court victory; and now, a new Chair.

Through all of this, we have had unwavering leadership and support from Diane E. Kaneb. The first woman to ever lead the Board of Mass. Eye and Ear, Diane's contributions have spanned a quarter century. She has volunteered countless hours to Mass. Eye and Ear and with her husband, Al, she has given millions of dollars to further our mission.

At the end of 2008, Diane agreed to extend her term and to lead the effort to find a successor. The result is exciting: Wyc Grousbeck is a leader with boundless energy and fresh ideas.

In December 2009, Trustees Jonathan Kutchins and William Roman, and newcomers Harvey Freishtat and Jonathan Uhrig joined the Board of Directors. We welcome them, and also offer our thanks to outgoing board members: Mary Kearney, Shaun Levesque, David Saul and Terence Wong.

Finally, 11 new trustees joined our ranks and are listed in the trustee section of this report. To each trustee and friend, we express our gratitude for your advocacy, your advice and your support.

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left: New Board Chair Wyc Grousbeck will lead Mass. Eye and Ear into a new era of growth and innovation. He follows Diane E. Kaneb, who has served Mass. Eye and Ear selflessly in many capacities for nearly a quarter of a century.

EXECUTING THE STRATEGY

Mass. Eye and Ear's Vision 2020 is a plan to collaborate, rather than compete. By teaming up with other healthcare providers to offer ophthalmology and otolaryngology services, Mass. Eye and Ear will contain cost, while extending the reach of its world-class care. In 2009, we introduced three new clinical collaborations.

Mass. Eye and Ear/Mass General Departments of Ophthalmology and Otolaryngology

Mass. Eye and Ear and Mass General formalized our long history of clinical and academic collaboration with an innovative new alliance. Mass General created Departments of Ophthalmology and Otolaryngology, which are led and staffed by Mass. Eye and Ear. Drs. Joan W. Miller and Joseph B. Nadol, Jr., now serve as chiefs at both Mass General and Mass. Eye and Ear, and our physicians have appointments at both hospitals.

While patients continue to receive their eye and ENT care at Mass. Eye and Ear, our physicians and scientists, as well as patients, benefit from the full participation of our chiefs in Mass General's leadership and decision-making.

Longwood Medical Area Ophthalmology Practice

A Clinical Affiliate of Brigham and Women's Hospital

Mass. Eye and Ear launched an ophthalmology outpatient practice based at One Joslin Place in the Longwood Medical Area. Dr. Lloyd P. Aiello, Chief of Joslin's Beetham Eye Institute, serves as Medical Director. Mass. Eye and Ear physicians Drs. Kenneth Chang and Sheila Borboli-Gerogiannis provide comprehensive ophthalmology care via a contract with Brigham and Women's Hospital (BWH). Additionally, a team of Mass. Eye and Ear physicians now provide inpatient consultation in ophthalmology and otology, as well as eye trauma coverage at BWH.

Our presence in the Longwood area significantly strengthens our offering of ophthalmic services and provides a foundation for future growth with other medical groups and organizations throughout the region.

Children's Hospital Ophthalmology Foundation at Mass. Eye and Ear

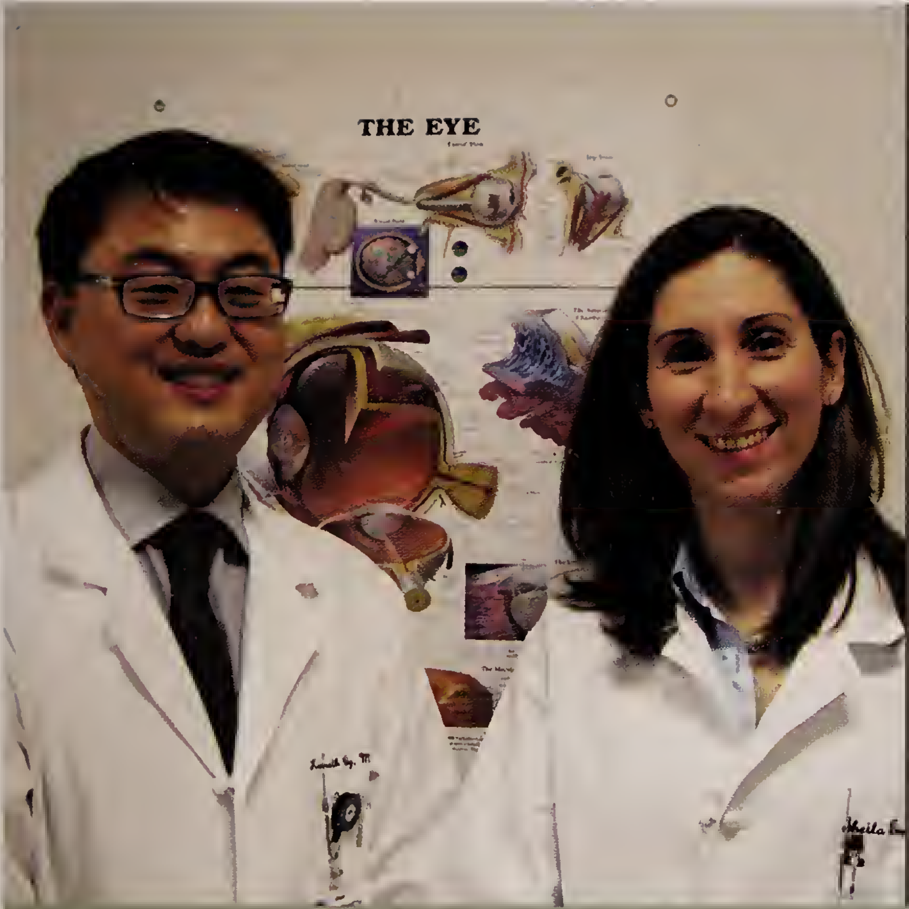
Thanks to a unique arrangement with Children's Hospital Boston, general pediatric and strabismus care at Mass. Eye and Ear is now being delivered by Children's ophthalmologists. Dr. Melanie Kazlas continues as Service Director.

Access for pediatric patients at Mass. Eye and Ear is greatly improved with the participation of additional physicians from Children's. Mass. Eye and Ear physicians Drs. Douglas Rhee and Kathryn Colby now offer subspecialty care in glaucoma and cornea at Children's Hospital Boston.

Mass. Eye and Ear faculty have long collaborated with Harvard Medical School colleagues on consultations and educational activity and training. It is our hope that these partnerships will also provide a greater breadth and depth of service to our patients.

Collaborations like these will enable us to bring specialty care to more people who need it; find cures and new treatments; and train more doctors, scientists and nurses, who will in turn, spread that knowledge around the world. So stay tuned… there's more to come!

right: Drs. Kenneth Chang and Sheila Borboli-Gerogiannis provide Mass. Eye and Ear ophthalmology services in the Longwood Medical Area.



Vision 2020 is a quantum leap forward in patient care and research. It will put Mass. Eye and Ear on a course to thrive for many years to come.

2020

LONGWOOD MEDICAL AREA

Access to the best care in Ophthalmology is now available to more patients with the addition of Mass. Eye and Ear in the Longwood Medical Area. Drs. Sheila Borboli-Gerogiannis and Kenneth Chang provide general and subspecialty eye care in our Mass. Eye and Ear Center at One Joslin Place. Additionally, Mass. Eye and Ear physicians provide inpatient consultation and eye trauma coverage for Brigham and Women's Hospital. The expansion to Longwood is part of a long-term strategic plan for Mass. Eye and Ear to provide the best and most accessible patient care for years to come.

highest quality care

"I had really given up hope and I didn't think anyone could help me... So every day that I get up and I taste my food and I can smell flowers or coffee — or just the air around me... I think about Mass. Eye and Ear and I think about Dr. Holbrook and I really want to thank them... They gave me my life back."
— Elizabeth Yoffe-Zierah, Sinus Patient

We spend a lot of time at Mass. Eye and Ear thinking about Quality: how to consistently improve ourselves; how to best measure that quality; how to best track our surgical and medical outcomes; how to continue to raise the bar and set the standard for care in our specialties.

But stories like Elizabeth's remind us that often the best indicator of our quality of care is the testimony of our patients whose quality of life has been improved through treatment, surgery and innovation at Mass. Eye and Ear.

It begins with our doctors – and this year Mass. Eye and Ear welcomed 10 new surgeons and physicians to the full-time faculty:

left: Elizabeth Yoffe-Zierah lost her senses of smell and taste due to a sinus condition. Thanks to treatment from Dr. Eric Holbrook, she can now take time to smell the roses, or any flower, for that matter.

CHIEF OF ANESTHESIA
Sunil Eappen, M.D.

DEPARTMENT OF OTOLARYNGOLOGY:
Iee Ching Anderson, M.D., Boston
Mandana Namiranian, M.D., Quincy
Brian Park, M.D., Newton-Wellesley

DEPARTMENT OF OPHTHALMOLOGY:
Nancy Kim, M.D., Ph.D., Ophthalmic Plastic Surgery Service
Manoj Thakker, M.D., Ophthalmic Plastic Surgery Service
Lucy Shen, M.D., Glaucoma Service
Daniel Esmaili, M.D., Retina Service and Angiogenesis Laboratory
Joseph Ciolino, M.D., Cornea and Refractive Surgery Service

DEPARTMENT OF ANESTHESIA:
Francis Dillon, M.D., Anesthesiologist

Our caregivers — the physicians, nurses, clinicians and technicians who help patients — are the heart and soul of highest quality of care. The staff of Mass. Eye and Ear is second to none when it comes to taking care of patients.

New technology and renovated space also help to improve the patient experience.

In 2009, completed renovations to Mass. Eye and Ear's main campus included:

- Radiology Department — Ground Floor
- Vision Rehabilitation Center — 8th Floor
- Jenks Vestibular Laboratory — 9th Floor

Still under construction, but slated for completion in 2010, include:

- Pediatric Inpatient and Observation Unit — 10th Floor
- Surgical Center — 5 new Operating Rooms — 6th Floor

SETTING THE STANDARD IN OUTCOMES

As an academic and research leader, Mass. Eye and Ear strives to set a standard for care for ophthalmology and otolaryngology surgical procedures and outcomes around the nation and the world.

In 2009, Mass. Eye and Ear took a major step forward in documenting those standards by establishing a program to publish Quality and Outcomes related to our specialties. The first installment, "Quality and Outcomes in Otolaryngology," was edited by Dr. Christopher Hartnick, published in September and distributed to physicians throughout the nation. A second installment in Ophthalmology, edited by Dr. Teresa Chen, is due in 2010.

The books are designed to establish metrics, measures and benchmarks for a comprehensive range of procedures and treatments in Ophthalmology and Otolaryngology. While the books are written for other specialists and referring physicians, we believe patients will also benefit from a deeper understanding of the surgical care we offer.

To learn more, read our Quality and Outcomes publications at MassEyeAndEar.org.

right: Joe Wright (also pictured on the cover of this Annual Report) is able to see the smiles on the faces of his wife, Heather, and children, Lexi, age 4, and Connor, age 2, thanks to emergency eye treatment at Mass. Eye and Ear.

2020

JOE'S STORY

Joe Wright was helping one of his workers remove a particularly stubborn nail when it shattered and struck him in the eye. He didn't know at the time that he was injured so severely he could potentially lose his vision. When his eye got worse despite treatment in his town, his wife, Heather, insisted he come to Boston and Mass. Eye and Ear. A few hours later he was in an operating room having a cut in his eye repaired by Dr. Ankoor Shah. Dr. Shah later removed a cataract caused by the trauma of his injury. Today Joe has 20/20 vision in his injured eye — and he routinely wears safety glasses.

"When faced with the reality that I could lose the vision in my eye, all I could think was 'how am I going to support my family?'"

— Joe Wright, husband, father and owner of a small construction company

financial health

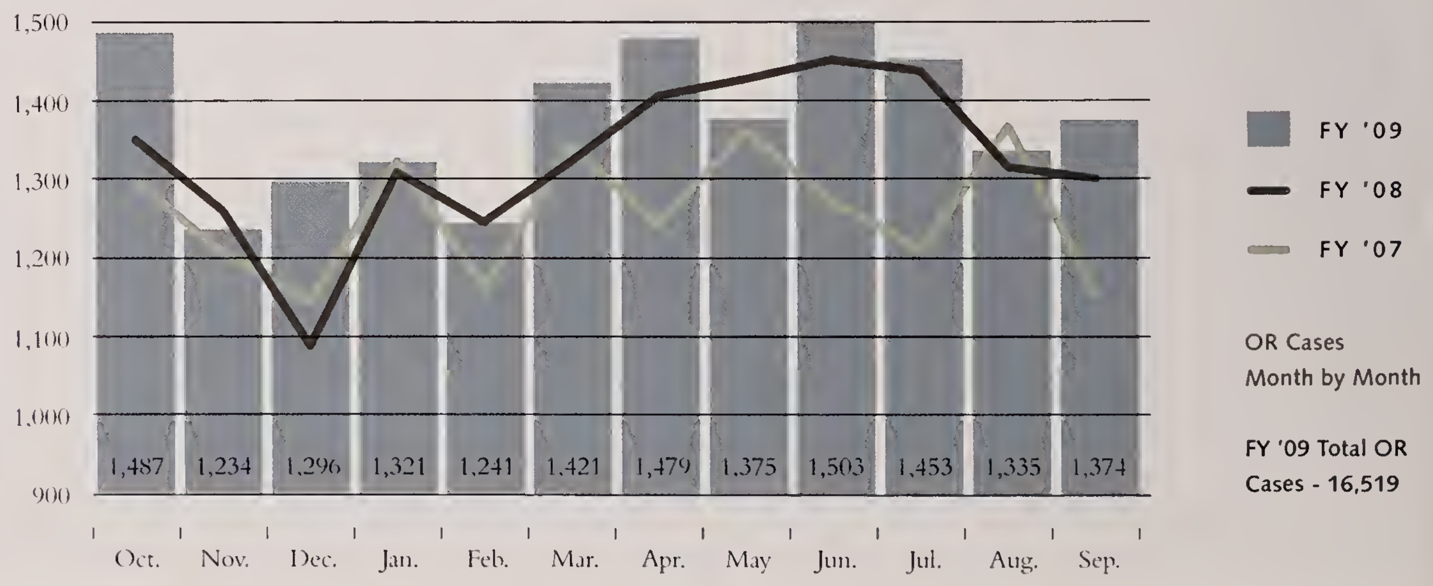
"What would you do if Mass. Eye and Ear weren't here? Where would you go for the diseases that no one else can handle? And where would you go to receive the treatment that you receive here? The doctors, the nurses, the staff, the administrators all have that desire to serve. It's in the corridors here. You feel it when you see the efficiency that does not deter warmth or compassion."
— Norman Knight, Philanthropist

As usual, our friend Norman Knight beautifully articulates the case for Mass. Eye and Ear and why it is so important that this hospital and its mission be able to thrive and grow, as we near the start of our third century.

2009 was, in many ways, a remarkable year in Mass. Eye and Ear's pursuit of financial health. The economic climate brought many challenges. Investment income dropped, philanthropy dropped, access to borrowing became more difficult; but growth in our outpatient practice visits and our surgical and imaging volume enabled us to finish the year strongly and remain focused on reinvesting in our mission

right: New spaces, such as our renovated 6th floor Surgical Center, will improve the patient experience. Dr. Sunil Eappen, Chief of Anesthesia, (l), and Bob Biggio, VP Facilities and Planning (r), are part of the team designing the new space.

SURGICAL CASES
MONTH BY MONTH



OR Cases
Month by Month

FY '09 Total OR
Cases - 16,519

SUFFOLK
SUFFOLK

SURGICAL VOLUME

Inpatient Surgical Services Total:	1,119
Ambulatory Surgical Services Total:	20,603

OUTPATIENT DEPARTMENTS

Eye Services Total:	136,516
ENT Services Total:	121,701

Emergency Department services total:	19,381

Inpatient Care:	42 beds
Total Discharges:	1,399

2020

ON COURSE FOR THE FUTURE

Golfers and hospital supporters gathered on the rolling greens at the Weston Golf Club for the First Annual Mass. Eye and Ear Golf Classic. The tournament to benefit the new Centers for Surgical Care at Mass. Eye and Ear raised more than $80,000 toward the project, part of Mass. Eye and Ear's "Best ORs by 2010" initiative. The initiative to modernize the hospital's surgical facilities is well underway, transforming the hospital's operating rooms to provide the best experience for both patients and staff.

and our future. On March 19, 2009, we had a one-day total of 100 surgeries performed: a first for the Mass. Eye and Ear ORs! This kind of success takes tremendous team work and we are grateful to the surgeons, anesthesiologists, nurses and staff who work so hard each and every day.

RESEARCH REVENUE

Research revenue played a significant role in our financial success. Our investigators were awarded 75 new grants totaling $33 million, including more than $7 million from the federal stimulus program. Below is the total research funding spent in FY '09.

COMBINED RESEARCH EXPENDITURES BY DEPARTMENT

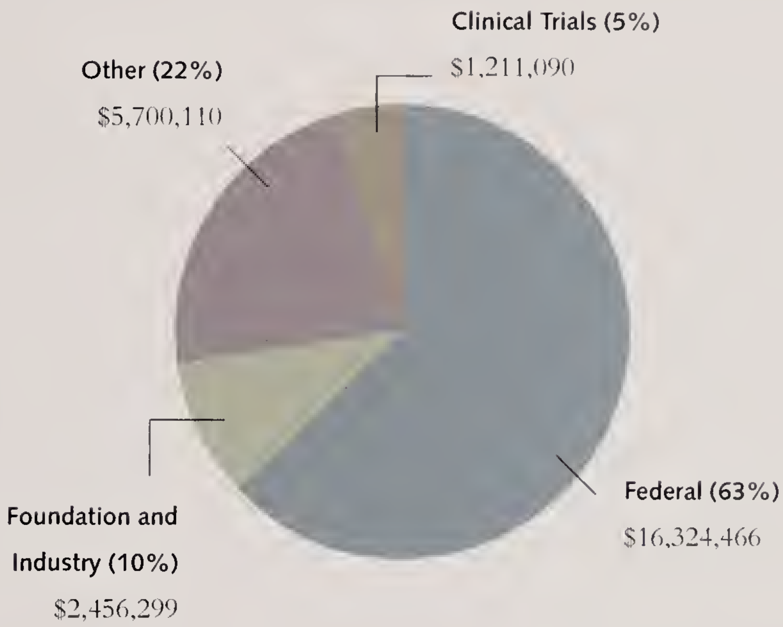
(Direct and Indirect)

	FY 2008	FY 2009
Ophthalmology	**$12,247,055**	**$12,120,259**
Otolaryngology	**$13,747,504**	**$13,571,705**
Total	**$25,994,559**	**$25,691,965**

left: Physicians from the North Suburban Center teed off at the First Annual Mass. Eye and Ear Golf Classic. (l to r) Drs. David Lesnik, David Nash, David Bowling and Michael Rho, who served as tournament co-chair with Dr. John Loewenstein. For information on this year's tournament, visit MassEyeAndEar.org.

COMBINED RESEARCH COSTS BY SOURCE – FY2009

(Direct and Indirect)



QLT INC. VICTORY

We must acknowledge the $127 million received from QLT Inc. further discussed in the research section of this report. It is a well-deserved payday for Mass. Eye and Ear following a bruising nine-year court battle. While serving to improve the hospital's balance sheet, the money will be invested in the betterment of eye research, clinical care and academic initiatives at Mass. Eye and Ear.

PHILANTHROPY

We are so grateful for friends and foundations, who lead the way in supporting life-changing research and care. We have listed a few of their remarkable gifts here:

- A pledge of $600,000 from the Ralph and Marion Falk Medical Research Trust to support sight-saving corneal research.
- An anonymous pledge of $600,000 to establish a temporal bone research fund at the Eaton-Peabody Laboratory.
- A grant of $323,231 from the European Commission for Closed Loop Neural Prostheses to support vestibular research led by Dan Merfeld, Ph.D.
- A gift of $250,000 from Tillotson Corporation to support hearing research at the Neil and Louise Tillotson Laboratory for Cell Biology of the Inner Ear.
- A grant of $246,441 from the National Centre of Services and Research for the Prevention of Blindness and Low Vision Rehabilitation to support cornea research.
- A gift of $200,000 gift from Frederick and Ines Yeatts to support research in hearing led by Zheng-Yi Chen, Ph.D.
- A gift of $152,000 from the Massachusetts Lions Eye Research Fund, Inc., to support ophthalmology research projects.
- An anonymous pledge of $150,000 to support research in hearing or balance.
- A gift of $146,510 from the estate of Joan M. Isaacsen for the unrestricted needs of the hospital.
- A grant of $120,000 from the Boston Foundation to support research in age-related macular degeneration.
- Grants totaling $120,000 from Research to Prevent Blindness to support eye research led by Drs. Reza Dana and Ivana Kim.
- A gift of $100,000 from the estate of Leona S. Vollintine to establish the Vollintine Otologic Research Fund to be used to develop new medical procedures to help the hearing impaired.

LOOKING FORWARD

A plan like Vision 2020 requires us to set and meet aggressive margin targets over the next several years. It will be essential for Mass. Eye and Ear to continue on a positive trajectory, in order for us to achieve our goals for growth, increased capital and strong investment in our mission. We are confident that we have all the elements — great physicians, scientists, nurses, managers and staff — in place to ensure that we will take care of our patients for the next two hundred years.

research and academic leadership

Danny Sanborn lived in a world of silence after a hereditary disease damaged his auditory nerve. He can hear the world once again after he received the first auditory brainstem implant in New England. Today Danny is participating in a research study at Mass. Eye and Ear that will someday lead to improved implants for others.

Mass. Eye and Ear is uniquely positioned to enable patients like Danny to help scientists develop better ways to treat the conditions and diseases that affect our patients' lives. Our educators then spread this knowledge to the world though our teaching programs.

Below are some examples of Mass. Eye and Ear's academic and research excellence in fiscal year 2009. Please visit "About Us" at MassEyeAndEar.org for the Chiefs' reports with additional accomplishments.

ADVANCING RESEARCH

In a challenging and competitive grant environment, our researchers submitted 199 grant proposals, received 75 new awards, and were able to secure more than $32,879,813 in grants in fiscal year 2009 to support their work. More than $6,945,600 was awarded from the American Recovery and Reinvestment Act Stimulus Funding Program. Total grants awarded increased by 33% this year, which is a testament to the high caliber of our research programs.

Some additional research successes include:

- Recruitment of Richard Masland, Ph.D., as director of the Howe Laboratory and associate chief for ophthalmology research.
- Dr. Janey Wiggs was awarded India/US Genetic Study of Ocular Quantitative Traits by the NEI.
- Dr. Ivana Kim was the recipient of a Research to Prevent Blindness Physician-Scientist Award to support her clinical research.
- An HMS Catalyst grant was awarded to Dr. Lucia Sobrin for her work in "Epidemiology & Genetics of Diabetic Retinopathy in the Jackson Heart Study."
- Margaret DeAngelis, Ph.D., was awarded the Thome Award from the Boston Foundation.
- Recruitment of Daniel Polley, Ph.D., as director of the Amelia Peabody Neural Plasticity Unit of the Eaton-Peabody Laboratories.
- New grant awarded to Daniel Merfeld, Ph.D., to study vestibular thresholds, including psychophysical response dynamics.
- New grant awarded to Jeffrey T. Lichtenhan, Ph.D., to investigate relating single-fiber tuning and delays to stimulus-frequency emissions.
- The Genes, Environment and Health Initiative (GEI) of NIH awarded $850,000 to Drs. Louis Pasquale and Janey Wiggs for a Genes and Environment Initiative in Glaucoma.

- Dr. Douglas Rhee was awarded an RO-1 grant of nearly $400,000 from National Eye Institute for his research titled "Matricellular Proteins in the Trabecular Meshwork Increase Intraocular Pressure."
- 23 new ophthalmology clinical trials initiated, ranging from comparison of different treatments for age-related macular degeneration to the effects of certain drugs on glaucoma and blepharitis.

We wish to express our appreciation to the foundations and organizations that support our research efforts. Your support is needed now more than ever and we appreciate all that you do to advance science at Mass. Eye and Ear.

ACADEMIC LEADERSHIP

In addition to conducting research to find better treatments and cures, our physicians are also teaching the medical professionals of tomorrow. We are pleased to note two promotions to full professor at Harvard Medical School. Congratulations to Dr. Deborah Langston, Professor of Ophthalmology, and Dr. Richard Gliklich, Professor of Otology and Laryngology. We are also pleased to announce the initiation of the process to endow Harvard Chairs at Mass. Eye and Ear in the names of Drs. Joan Miller and Evangelos Gragoudas in honor of their contributions to research. While adding to Drs. Miller's and Gragoudas' great legacies here, they will also give two professors on our staff the freedom to conduct their own ground-breaking research and to focus on training a new generation of medical leaders.

right: Mass. Eye and Ear welcomed Richard Masland, Ph.D., as the Director of the Howe Laboratories of Ophthalmologic Research. A professor at Harvard Medical School, Dr. Masland is well-known for his accomplishments in basic and translational research of the retina.

EDUCATIONAL HIGHLIGHTS

We held courses that drew faculty and attendees from all over the world. The fifth annual Cataract Course, offered to rising 3rd year residents throughout the United States, drew 110 participants with 43 faculty members drawn from resident teaching programs throughout the country. The Ophthalmology Annual/Alumni Meeting featured the Mariana Mead Lecture, Distinguished Alumni Awards and Lectures, and a day and a half of didactic presentations on clinical, basic research and translational research topics. We launched the first Mass. Eye and Ear-sponsored Ophthalmic Technician training program. We also held "An Update on Pediatric Airway, Voice and Swallowing," "Laryngology Disorders 2009," and "Surgery of the Thyroid and Parathyroid Glands."

Our faculty won many awards and prizes this year.

- Dr. Michael Cunningham received the 2009 Sylvan Stool Award for Excellence in Teaching and Service given by the Society for Ear, Nose and Throat Advances in Children (SENTAC)
- Drs. Daniel Deschler and Gregory Randolph were chosen as members of the Steering Committee for the World Congress on Thyroid Cancer held in Toronto, Canada.
- Dr. Robin Lindsay was the recipient of the 2009 Sir Harold Delf Gillies Award from the American Academy of Facial Plastic and Reconstructive Surgery Foundation in

EJN
The Journal of
Comparative Neur

2020

PIONEERING ADVANCES

Blindness was almost a certainty before Drs. Joan Miller and Evangelos Gragoudas developed the first drug treatment for wet age-related macular degeneration (Visudyne). This treatment has been available for a decade — and it took a decade for Mass. Eye and Ear's role in this research to be recognized. Our research and academic programs received a $127 million boost with the resolution of a lawsuit concerning the hospital's role in the research which transformed patient care and laid the foundation for subsequent treatments that have saved and restored vision for more than a million people worldwide.

> *"Drs. Miller and Gragoudas have transformed patient care for one of the leading forms of blindness, age-related macular degeneration (AMD)."*
>
> *—John Fernandez, President & CEO, Mass. Eye and Ear*

THE NIGHT
Massa tts
Eye a
Infirma

recognition of the best basic science research paper written by a fellow, entitled "Daily facial stimulation improves recovery after facial nerve repair."

- Dr. Saumil Merchant was the recipient of the Inaugural Paparella Lectureship Award given by the University of Minnesota and the International Hearing Foundation for outstanding achievements in scientific and clinical otology and neurotology.
- Richard Masland, Ph.D., was named the recipient of the 2010 Proctor Award, the highest honor of the Association for Research in Vision and Ophthalmology (ARVO).
- Dr. Joan W. Miller was the 2009 recipient of the J. Donald Gass Medal from The Macula Society.
- Dr. Cynthia Grosskreutz won a Mid-Career Award from the American Glaucoma Society, 2009.
- Dr. Reza Dana won the Lew R. Wasserman Merit Award from Research to Prevent Blindness.
- Drs. Miller, Demetrios Vavvas and Ivana Kim won a Boston Foundation award to create the first primate model of dry AMD.
- Dr. Carolyn Kloek was awarded a 2009 Eleanor and Miles Shore 50th Anniversary Fellowship from Harvard Medical School.
- Margaret M. DeAngelis, Ph.D., received Harvard's 2009 Milton Award to study macular degeneration.
- Dr. Jason Comander was one of 19 candidates selected from programs across the United States to attend the Fourth Annual Heed Ophthalmic Foundation Residents' Retreat in Chicago.
- Dr. Joseph Ciolino was part of a science team that won the $100,000 prize in the MIT $100,000 Life Sciences Track for their project developing a drug-eluting contact lens. Dr. Ciolino also won a K-08 grant for pursuing research in this field.

left: Drs. Joan Miller and Evangelos Gragoudas received the Reynolds Society Achievement Award in Research for their pioneering work which led to the development of the first treatment for wet age-related macular degeneration.

In 2009 ARVO announced an inaugural class of Distinguished Fellows. Ophthalmology faculty who were named Silver fellows include: Drs. Eliot L. Berson, James Chodosh, Reza Dana, Claes H. Dohlman, Thaddeus P. Dryja, Evangelos S. Gragoudas, Tatsuo Hirose, Joseph F. Rizzo, III, and Janey L. Wiggs.

And finally, Mass. Eye and Ear celebrated a big victory this year with the resolution of a nearly decade-long lawsuit. The case related to the work of Drs. Joan W. Miller and Evangelos Gragoudas, whose research in photodynamic therapy led to the development of Visudyne, the first drug treatment for macular degeneration. The hospital received $127 million from QLT Inc. as part of a judgment that awarded it royalties of 3.01% on worldwide past, present and future net sales for Visudyne. As a result, substantial new funds will be available to Mass. Eye and Ear for academic and research programs, with allocations to support institutional, departmental and retina research initiatives.

We are very proud of the pioneering research done by Drs. Miller and Gragoudas — and by all of our researchers — and of our tradition of research to transform medical care. Funds from this judgment will be reinvested in research and educational programs thereby furthering our mission to improve clinical care, train the next generation of medical leaders, and develop more treatments for those who suffer from debilitating diseases.

community outreach

"Going out into the community to help is one of the most rewarding aspects of my work at Mass. Eye and Ear."
— Ankoor Shah, M.D., Chief Resident

Mass. Eye and Ear was founded on the premise of caring for the community. Today our physicians, nurses and others perform community service activities that include screenings, lectures, free care and participation in health fairs, throughout Greater Boston and the world.

Some highlights from last year's community benefits program include a new public education seminar, "Update on Age-Related Macular Degeneration," which provided information on care and research to help with early identification and treatment of this blinding disease.

We continued our established seminar series: the 9th annual "Have You Heard" seminar on hearing and balance and the 3rd annual Sinusitis forum. On-campus head and neck cancer screenings helped to provide early identification and to educate about prevention. We provided pediatric vision and hearing screenings at our adopted school, the Neighborhood House Charter School in Dorchester, with the help of the Children's Hospital Ophthalmology Foundation and the Mass. Eye and Ear Department of Audiology. For the second year, we provided vision screenings at the South Elementary School in Stoneham and Camp Harbor View on Long Island in Boston Harbor.

Collaboration continues to be an important component of our community benefits program. We worked with Vision Coalition Massachusetts to provide full eye exams for young adults in the Year Up Boston program, which prepares young urban adults for successful careers. Those who needed eyeglasses received free pairs courtesy of Vision Coalition Massachusetts and the Mass. Eye and Ear Optical Shop. Additionally, our physicians collaborated with several groups, including local Lions Clubs, to provide screenings at the Diabetes Expo. We worked with the Schepens Eye Research Institute, Tufts Medical Center and Boston University Medical Center to provide screenings and raise awareness of gender inequities in vision care as part of World Vision Day.

Further afield, our physicians traveled on medical missions to all corners of the world: to Ecuador, to provide reconstructive surgery for children born without ears, and to Sudan, to restore vision to those who had lost it due to certain corneal diseases.

Mass. Eye and Ear's commitment to community service is unwavering. For a complete list of our community service activities or to suggest how we can better serve the community, please visit MassEyeAndEar.org.

right: Dr. Kathryn Colby describes a mini-telescope that may help those with age-related macular degeneration.

"I appreciated the range and depth of the talks about hearing and balance. The doctors and researchers provided good technical and scientific explanations."

— 9th annual "Have You Heard" audience member

2020

COMMITTED TO OUR COMMUNITY

Mass. Eye and Ear continued outreach to communities near and far, as physicians and staff members provided resources, services and education to those in need. This year the hospital's community benefits program saw the addition of an "Update on Age-Related Macular Degeneration." The seminar provided information to help with early identification and treatment of this condition — the number one cause of blindness in people over the age of 50. The hospital's devotion to community remains paramount; the dedication and caring of its employees makes it possible.

financial statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. - Combined Balance Sheet as of September 30, 2009

ASSETS

Current Assets	
Cash and Cash Equivalents	4,731,320
Short-Term Investments	541,962
Assets Whose Use is Limited (Required for Current Liabilities)	30,825,881
Patient Accounts Receivable (Less Allowance for Doubtful Accounts $3,696,891)	21,510,974
Other Current Assets	11,814,637
Total Current Assets	**69,424,774**
Assets Whose Use Is Limited	
Construction Fund	-
Special Cash Reserves	5,007,094
QLT Settlement Funds	50,808,772
Under Indenture Agreement	4,648,759
Total Assets Whose Use is Limited	**60,464,625**
Investments	93,099,307
Pledges Receivable, Net	1,823,412
Remainder Interest in Charitable Trusts	381,517
Beneficial Interest in Trusts	13,186,598
Property, Plant & Equipment (Net of Depreciation of $187,188,720)	93,907,851
Other Assets	
Intangible Assets (Net of Amortization of $1,541,084)	314,624
Deposits	1,589,900
Total Assets	**334,192,608**

LIABILITIES AND NET ASSETS

Current Liabilities	
Current Portion of Long-Term Debt and Capital Leases	7,583,442
Accounts Payable and Accrued Expenses	29,405,484
Accrued Interest	340,240
Estimated Third Party Settlements	2,857,349
Total Current Liabilities	**40,186,515**
Long-Term Debt and Capital Leases, Less Current Portion	33,645,874
Asset Retirement Obligation	514,748
Deferred QLT Revenue	65,173,947
Accumulated Post-Retirement Benefit Obligation	188,312
Professional Liability Reserve	1,358,648
Accrued Pension Costs	23,277,386
Annuities and Unitrusts Payable	933,492
Total Liabilities	**165,278,922**
Net Assets	
Unrestricted for General Operations	47,379,635
Board Designated	34,823,718
Total Unrestricted Net Assets	**82,203,353**
Temporarily Restricted	39,477,804
Permanently Restricted	47,232,529
Total Net Assets	**168,913,686**
Total Liabilities and Net Assets	**334,192,608**

financial statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. - Combined Statement of Revenue and Expenses of the General Fund as of September 30, 2009

NET PATIENT REVENUE

Net Patient Service Revenue	161,611,410
Other Operating Revenue (Including $30,496,341 from Research, Contributions and Grants)	112,334,631
Total Operating Revenue	**273,946,041**

A copy of the audited financial statements is available upon request from the Office of Public Affairs, (617) 573-3340.

OPERATING EXPENSES

Patient Care and Clinical	130,787,461
General and Administrative	99,749,398
Research	30,371,993
Fundraising	1,330,764
Education	2,380,570
Total Operating Expenses	**264,620,186**
Income from Operations	9,325,855
Gains from Operations	**9,325,855**
Other Gains	974,993
Excess of Revenues Over Expenses	**10,300,848**
Other Support	2,010,513
Increase in Unrestricted Net Assets	**12,311,361**
Pension and Postretirement-related charges other than net periodic pension cost.	(10,384,351)
Increase in Unrestricted Net Assets	**1,927,010**
In addition, the Foundation received the following restricted funds income: Gifts and Bequests	3,500,073
Investment Income:	
Investment Income (loss), net of investment expenses	(1,568,034)
Realized Gains on Investments	1,481,427
Unrealized Gain on Investments	2,474,976
Loss on Beneficial Interest in Trusts	(1,331,867)

employee stars

January
Vincent A. Capobianco
Embankment Services, John Jeffries House

February
Imerson A. Estrela
Patient Operations

March
Cheryl A. Barrett
Human Resources

April
Patricia Raposo
Comprehensive Ophthalmology

May
Lydia M. Calderon
Patient Accounts

June
Lauren Tsevdos
Planning

July
Kristina Sym
Development

August
Carolyn Marks
Retina Service

September
Michael McDonald
Information Services

October
Joanne Peters
Ophthalmology

November
John Farrell
Central Registration

December
Angela Ho
Fiscal Affairs

benefactors

The Reynolds Society

Named in honor of Edward Reynolds, M.D. (1793-1881), co-founder of the Massachusetts Eye and Ear Infirmary, the Reynolds Society was established in 1986 to recognize those special friends who contribute at a leadership level during the fiscal year. Mass. Eye and Ear thanks the following Reynolds Society members for their gifts and pledges of $2,500 or more from Oct. 1, 2008 through Sept. 30, 2009. Senior hospital-based medical staff and senior managers who give $2,000 or more and other hospital-based medical staff and employees who give $1,000 or more are also recognized as Reynolds Society members.

Gifts of $500,000 - $999,999

Anonymous (1)
Dr. Ralph & Marian Falk Medical Research Trust

Gifts of $100,000 - $499,999

Anonymous (2)
John and Claire Bertucci
The Boston Foundation
John and Rita Cannistraro
Michael and Betsy Dingman
European Commission for Closed Loop Neural Prostheses for Vestibular Disorders
The Tamra F. Gould and Howard Amster II Philanthropic Fund of the Jewish Community Federation of Cleveland
Estate of Joan M. Isaacsen
Massachusetts Lions Eye Research Fund
National Centre of Services and Research for the Prevention of Blindness and Low Vision Rehabilitation
Tillotson Corporation
Tinnitus Research Consortium
Estate of Leona S. Vollintine
Frederick and Ines Yeatts

Gifts of $50,000 - $99,999

Anonymous (2)
Anonymous in honor of Evangelos S. Gragoudas, M.D.
The Alcon Foundation, Inc.
Robert and Michelle Atchinson
Estate of Shirley Baillieul
Nelson and Ruth Darling
Diane E. and Albert J. Kaneb
Robert E. Naser
Mr. and Mrs. David A. Neskey
Research to Prevent Blindness
Mr. and Mrs. Michael C. Ruettgers
Henry N. Wheeler

Gifts of $25,000 - $49,999

Anonymous (2)
American Glaucoma Society
Mr. and Mrs. Jorge E. Bacardi
Robert N. Boucai
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Associate Surgeons
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David Hunter, M.D., Ph.D.
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William G. Stinson, M.D.
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Christopher Andreoli, M.D.
Charles Barsam, M.D.
Fina Barouch, M.D.
Sheila Borboli-Gerogiannis, M.D.
Stacey C. Brauner, M.D.
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Kameran Lashkari, M.D.
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Demetrios Vavvas, M.D., Ph.D.
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Anat Stemmer-Rachamimov, M.D.

Associate Staff

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David Yi, M.D.

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Howard Marton, M.D.
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Margaret McLaughlin, M.D.

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Jared Ament, M.D.
Anupama Anchala, M.D.
Pooja Bhat, M.D.
Joseph Ciolino, M.D.
Jessica Ciralsky, M.D.
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Mohammed Dastjerdi, M.D.
Daniel Esmaili, M.D.
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Andrea Jue, M.D.
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Pauline Lim, M.D.
Kristie Lin, M.D.
Kristine Tan Lo, M.D.
John Mauro, M.D.
Manisha Mehta, M.D.
Ellen Browne Mitchell, M.D.
Sandra Montezuma, M.D.
John Nguyen, M.D.
Sangita Patel, M.D.
Tarek Shazly, M.D.

Residents (Academic Year 2009)

Audrey Ahuero, M.D.
Nicole Benitah, M.D.
Grace Chang, M.D.
Jason Comander, M.D.
Anthony Daniels, M.D.
Hani Salehi-Had, M.D.
Rebecca Hunter, M.D.
Justin Kanoff, M.D.
Sahar Kohanim, M.D.
Kristina Kurbanyan, M.D.
Ann-Marie Lobo, M.D.
Zhonghui Luo, M.D.
Lynn Poole Perry, M.D.
Rajesh Rao, M.D.
Saadia Rashid, M.D.
Jullia Rosdahl, M.D.
Erin Salcone, M.D.
Ankoor Shah, M.D.
Rebecca Stacy, M.D.
Tasha Tanhehco, M.D.
Hana Takusagawa, M.D.
Aisha Traish, M.D.
Kimberly Trinca,M.D.

Research Laboratories

Howe Laboratory

Richard Masland, Ph.D., Director
Janey L. Wiggs, M.D., Ph.D., Associate Director

Angiogenesis Laboratory

Evangelos S. Gragoudas, M.D., Co-Director
Joan W. Miller, M.D., Co-Director

Berman-Gund Laboratory for the Study of Retinal Degenerations

Eliot L. Berson, M.D., Director

Laser Laboratory

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Joan W. Miller, M.D., Co-Director

Ocular Molecular Genetics Institute

Margaret M. DeAngelis, Ph.D., Director

Retina Research Institute

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Joan W. Miller, M.D. Co-Director

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Ula Jurkunas, M.D.
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Terri McGee, M.D.
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Basil Pawlyk, M.Sc.

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Rodrigo Alvarez, M.D.
Irina S. Barequet, M.D.
Ling Chen, Ph.D.
Yihe Chen, Ph.D.
Cynthia Cordeiro, M.D., Ph.D.
Bao-Jian Fan, M.D.
Giulio Ferrari, M.D.
Andrea Giani, M.D.
Akira Hagiwara, M.D.
Seung-Youn Jea, M.D.
Ja-Heon Kang, M.D., Ph.D.
Min Hyung Kang, Ph.D.
Maki Kayama, M.D.
Xanthi Koufoumichali, M.D.
Joo-Eun Lee, M.D.
Akrivi Manola, M.D.
Sadaharu Miyazono, Ph.D.
Yuki Morizane, M.D.
Nadia Tajouri Morizur, M.D.
Yusuke Murakami, M.D.
Nambi Nallasamy, M.D.
Athanasios Papakostas, M.D.
Mi In Roh, M.D.
Sana Siddique, M.D.
Alexandra Silveira, Ph.D.
Ahmed Z. Soliman, M.D.
Daniel Sun, O.D., Ph.D.
Xun Sun, Ph.D.
Aristomenis Thanos, M.D.
Sofia Theodoropoulou, M.D.
Georgios Trichonas, M.D.
Hiroki Ueno, M.D., Ph.D.
DanYi Wang, M.D.
Xiao-Hong Wen, Ph.D.
Souska Zandi, M.D. Ph.D.
Yan Zhang, Ph.D.
Xiaohong Zhou, M.D.

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Chief of Otolaryngology
Joseph B. Nadol, Jr., M.D.

Surgeons

Barry J. Benjamin, M.D.
Yale J. Berry, M.D.
Jeffrey S. Brown, M.D.
Jean M. Bruch, M.D.
Nicolas Y. BuSaba, M.D.
Mack L. Cheney, M.D.
Michael J. Cunningham, M.D.
Daniel G. Deschler, M.D.
Pamela F. Diamond, M.D.
Roland D. Eavey, M.D.
A. Greer Edwards, M.D.
Peter N. Friedensohn, M.D.
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Steven D. Rauch, M.D.
Edward J. Reardon, M.D.
Mark F. Rounds, M.D.
Michael A. Williams, M.D.
Steven M. Zeitels, M.D.

Associate Surgeons

Ramsey Alsarraf, M.D.
Samir M. Bhatt, M.D.
David M. Bowling, M.D.
Victor Calcaterra, M.D
Ramon A. Franco, M.D

K. Holly Gallivan, M.D.
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George Kazda, M.D.
David A. Kieff, M.D.
Derrick T. Lin, M.D.
James A. Rocco, M.D., Ph.D.

Assistant Surgeons

Jaimie DeRosa, M.D.
Ronald K. de Venecia, M.D., Ph.D.
Alex Grilli, M.D.
Donald G. Keamy, Jr., M.D.
Daniel J. Lee, M.D.
Michael B. Rho, M.D.
Jennifer L. Smullen, M.D.
Eric H. Stein, M.D.

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lee Ching Anderson, M.D.
Kevin S. Emerick, M.D.
David J. Lesnik, M.D.
Mandana R. Namiranian, M.D.
Brian J. Park, M.D.
Phillip C. Song, M.D.
Konstantina M. Stankovic, M.D., Ph.D.

Pathologist

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William Faquin, M.D.

Assistant Pathologist

Artur Zembowicz, M.D.

Consultant in Dermatologic Surgery

Jessica L. Fewkes, M.D.

Consultants in Neurology

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Stephen W. Parker, M.D.

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Adrian J. Priesol, M.D.

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Dukhee Rhee, M.D.
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Russell S. Shu, M.D.
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Consultant in Allergy and Immunology

Johnson Wong, M.D.

Consultant in Dermatologic Surgery

Oon T. Tan, M.D.

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Jon Buras, M.D.
Wende Buras, M.D.
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Randall D. Gaz, M.D.

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Ely A. Kirschner, M.D.

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Carol Lorente, D.M.D.

Consultant in Pediatric Surgery

David F. Lawlor, M.D.

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Jonathan Winograd, M.D.

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Thomas R. Klein, M.D.

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William G. Lavelle, M.D.

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Parviz Janfaza, M.D.

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Joseph A. Moretti, M.D.

David L. Pierce, M.D.

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Meritxel Argence, Ph.D.

Tao Cheng, Ph.D.

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Mingqian Huang, Ph.D.

Dipti Kamani, M.D.

Albena Kantardzhieva, Ph.D.

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Sang Goo Lee, Ph.D.

Jeffery Lichtenhan, Ph.D.

Chadi Makary, M.D.

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Mark Parker, Ph.D.

Marcello Peppi, Ph.D.

Deborah Perez-Fernandez, Ph.D.

Marco Petrillo, Ph.D.

Yong Tang, Ph.D.

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Robin W. Lindsay, M.D.

Andrew A. McCall, M.D.

Anthony C. Nichols, M.D.

Sara L. Richer, M.D.

Jennifer J. Shin, M.D.

Residents

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2009 Annual Report

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FY '09: The Chiefs' Reports: MassEyeAndEar.org/about-us

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experience life

MASSACHUSETTS EYE AND EAR ANNUAL REPORT 2010

<< *Cover: Joey McIntyre (shown with son Rhys Edward) knows Mass. Eye and Ear has "The Right Stuff" when it comes to advancing research and treatment of hearing loss. His son Rhys' diagnosis of hearing loss as a newborn prompted him to lend his support to the hospital.*

Now that I can hear my friends,
I see them more.
Massachusetts
Eye and Ear
see
hear
feel
smell
move
speak
taste
sense
experience.
life.

HAVE A STORY TO SHARE?

In the fall of 2010, Mass. Eye and Ear embarked on a new branding campaign to help spread the word about the work we do. The goal is to help others understand that Mass. Eye and Ear's patient care, research and teaching is transformative in allowing people to gain a better quality of life, through improved communication and connection to the world around them.

The messages have been rolling out on radio and television, in magazines and newspapers, on websites and through social media.

Has Mass. Eye and Ear helped you to better experience life? Share your story with us at MassEyeAndEar.org/AboutUs or Facebook.com/MassEyeAndEarNews

experience life

Dear Friends,

Boom! It's here.

For the next 19 years approximately 10,000 baby boomers in the United States will turn 65, every day! The generation, defined in part by a population boom, now faces the joys and challenges of aging. Those challenges include the fact that senior years often bring conditions that include a loss of vision, hearing, taste and smell, balance and voice.

10,000 boomers, each and every day!

Consider also the obesity crisis in our country and the increasing number of people at risk for diabetes and diabetes-related eye disease or the growing prevalence of head and neck cancer.

Simply put, the work of Mass. Eye and Ear's physicians, scientists, nurses and caregivers has never been more relevant than it is right now.

Add to this the efforts of our pediatric teams, who are working to ensure that each child has the best possible development arc despite conditions that might otherwise prevent him from seeing, hearing, speaking or even smiling.

The patients who come through our doors every day hope that by some measure, we can help them regain their quality of life and to more richly "experience life." Far beyond our doors, many more patients also benefit, thanks to new innovations, new treatments, new techniques — developed at Mass. Eye and Ear and spread world-wide through our research and teaching mission.

This is an extraordinary place, during an extraordinary time in our history. It is my pleasure to present Mass. Eye and Ear's Annual Report for 2010. It is a brief look back at a year filled with clinical, scientific and strategic success. **But make no mistake, our focus is fully on the future.**

None of our success is possible without the friendship of people like you. Your continued support of Mass. Eye and Ear's mission is deeply appreciated. On behalf of our Board Chair Wyc Grousbeck, our Board, our Trustees, our Chiefs, our management team, and all of our employees, we thank you.

Sincerely,

John Fernandez

John Fernandez
President & CEO

Massachusetts Eye and Ear
800 HUNTINGTON AVENUE
Massachusetts Eye and Ear

Artist's rendering of Mass. Eye and Ear's future multi-specialty ambulatory care center at 800 Huntington Avenue in the Longwood Medical Area. Design and construction planning is on track for the center to open to patients late in 2012. (image courtesy of Tsoi/Kobus & Associates)

strategy and leadership

*"The quality of leaders is reflected in
the standards they set for themselves."*
— Ray Kroc

At Mass. Eye and Ear we take seriously the privilege and responsibility that comes with setting a standard of excellence throughout the world. In addition to recruiting great physicians, scientists and staff in 2010, hospital leadership put tremendous focus on building a Board of Directors that will accelerate Mass. Eye and Ear through an exciting and challenging period of growth.

BOARD OF DIRECTORS

Our Chairman Wyc Grousbeck led the effort to recruit and then welcome three new members to our Board of Directors: James Carlisle, Lyle Howland and Annette Nova. We also offer our deepest thanks to outgoing Board members: long-time Treasurer, Bill Darling; former Vice-Chair David Scudder; and Herbert Pollack for their service. We look forward to their continued advice and participation as Trustees.

QUALITY PLANNING

In healthcare, quality is job #1. Under direction from the Board's Quality Committee, the executive team worked with physician leaders to develop a new plan for quality throughout all Mass. Eye and Ear sites. This is an all-encompassing effort to ensure safety and the best possible outcome for all patients.

The Quality Plan focuses on three key goals for 2011: Transparency Through Outcomes; Provider Excellence; and a Gold-Standard Patient Experience. Mass. Eye and Ear made great progress in 2010 by publishing its first Quality and Outcomes Books in Otolaryngology and Ophthalmology. This evidence-based approach to examining the effectiveness of our clinical care is designed to set a standard throughout medicine. We look forward to publishing a new hospital-wide edition in fall of 2011. To read the current Quality and Outcomes publications, go to MassEyeAndEar.org and click on Quality.

STRATEGIC SUCCESS

Execution of our business planning brought us one year closer to realizing Vision 2020, the 10-year strategic plan for Mass. Eye and Ear. Several key components are underway.

Mass. Eye and Ear has now filed an Institutional Master Plan Notification Form with the City of Boston, with focus on expansion for Mass. Eye and Ear's main campus. Plans include a Mass. Eye and Ear Center for Research and an expansion and renovation of clinical space in the hospital tower at 243 Charles Street.

Design is underway for a new multi-specialty ambulatory care center at 800 Huntington Avenue in the Longwood Medical Area. This will allow us to extend our care and surgical services to patients for whom Longwood is more convenient, as well as to grow our practices in collaboration with other healthcare providers.

We also opened a new Mass. Eye and Ear ENT practice in Concord. We welcomed Dr. Stephen Smith, an established community-based physician in Concord, as well as Dr. Ayesha Khalid, who plans to build a thriving practice. Both doctors see patients on Baker Avenue in Concord and are credentialed to operate at Mass. Eye and Ear and at Emerson Hospital. In addition to Longwood Medical Area and Concord, Mass. Eye and Ear locations now include Boston, Braintree, East Bridgewater, Milton, Quincy, Newton, Stoneham and Weymouth.

The strength of any organization's planning is found in its people. Building a broader patient care network gives us better flexibility to support our physicians, scientists and staff who are obsessed with finding new treatments and cures, training future medical leaders, and improving the quality of care at all Mass. Eye and Ear sites.

For more information on our strategic planning, log on to MassEyeAndEar.org/About-us.

MASS. EYE AND EAR LOCATIONS

site	*specialty areas*	*visits*
Boston-243 Charles Street	Eye, ENT, Audiology	156,147
Boston-Carney Hospital	Eye	120
Boston-Longwood	Eye	598
Braintree	ENT	384
Concord	ENT	247
East Bridgewater	Eye, ENT, Audiology	4,714
Milton	ENT	4,269
Newton-Wellesley	ENT, Audiology	13,555
Quincy	ENT	13,622
Stoneham	Eye, ENT, Audiology	21,204
Weymouth	ENT	1,132

> "[Surgical checklists] are quick and simple tools aimed to buttress the skills of expert professionals. And by remaining swift and usable and resolutely modest, they are saving thousands upon thousands of lives."
>
> **— Dr. Atul Gawande, The Checklist Manifesto**

quality & patient safety

THE SURGICAL CHECKLIST

At Mass. Eye and Ear, we want exceptional care to be our routine. And we're emphasizing the importance of delivering high-quality care with continued training for our clinical staff through our Quality, Humanism and Professionalism (QHP) Program. This year the QHP Program welcomed best-selling author and surgeon Dr. Atul Gawande, who addressed a standing-room only crowd in Mass. Eye and Ear's Meltzer Auditorium. A leader in innovative thinking to improve the quality of care, Dr. Gawande is a proponent of a surgical checklist. Implemented in Mass. Eye and Ear operating rooms this year, the checklist is a tool which has proven to significantly reduce the occurrence of medical errors.

As a member of the National Guard, Greg Page provides assistance in the worst of circumstances. We're proud to say we were able to do the same for him when he was diagnosed with tongue cancer. Thanks to treatment at Mass. Eye and Ear, he's cancer free and reporting for duty.

highest quality care

A newlywed on leave from his full-time National Guard position, Greg Page noticed a bump on his tongue during his honeymoon. The then 31-year-old was diagnosed with squamous cell tongue cancer. After surgery and a tongue reconstruction, Greg is now cancer free and able to speak, smile and enjoy married life.

At Mass. Eye and Ear, when we talk about improving or even transforming your quality of life, we mean it.

That transformation begins with an improved patient experience. This year we opened the new 6th floor Ambulatory Surgical Center with five operating rooms, replacing an antiquated three-room SurgiCenter. Now our day surgery patients can check in, undergo surgery, then recover all on the same floor. We also unveiled a brand new pediatric surgical unit, with specially designed child (and parent) friendly check-in and recovery and beautiful patient rooms.

Laser treatment is now more convenient for our ophthalmology patients, thanks to a new laser room in the first floor eye clinics. We are also preparing to open a new laser center on the 9th floor. Dr. Oon Tot Tan joins Mass. Eye and Ear as director of this new center, which will serve both her practice and all Mass. Eye and Ear patients with ENT, Eye and dermatologic needs.

Dr. Tan is just one of 18 new physicians and surgeons we welcomed to our full-time faculty in 2010.

In Otolaryngology: Benjamin Bleier, M.D., General Otolaryngology, Boston; Ayesha Khalid, M.D., General Otolaryngology, Rhinology, Concord; Greg Whitman, M.D., Otoneurology at Braintree Rehabilitation Hospital; and Steven Smith, M.D., General Otolaryngology, Concord.

In Ophthalmology: Dean Eliott, M.D., Retina, Boston; Ann Marie Lobo, M.D., Uveitis and Comprehensive Ophthalmology, Boston; Lotfi Merabet, O.D., Ph.D., Howe Lab and Vision Rehab., Boston; Lynn J.P. Perry M.D., Ph.D., Chief Resident and Trauma Service, Boston; Angela Turalba, M.D., Glaucoma, Boston; and Kip Connor, Ph.D., Angiogenesis, Boston.

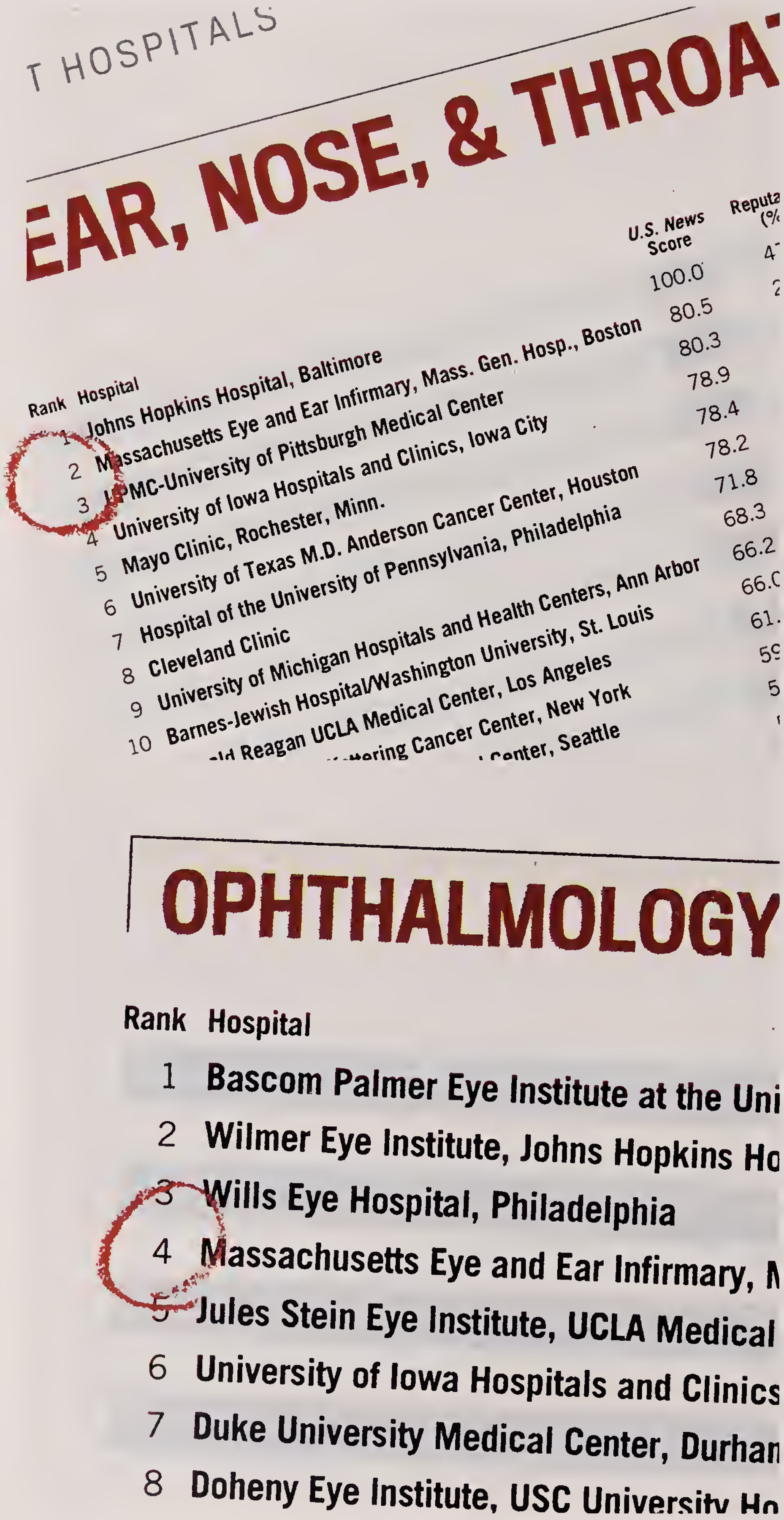
In Anesthesia: Martha Cordoba, M.D., Lina Diaz, M.D., Pediatrics; Jeremy Goldfarb, M.D., Critical Care/Medicine; Holly Happe, D.O., Pediatrics; Jason Lewis, M.D.; Alvaro (Andres) Macias, M.D; and Dongdong Yao, M.D.

Anesthesia also enhanced the staff with several CRNAs: Scott Thompson, C.R.N.A., Chief C.R.N.A; Bethany Giacobozzi, C.R.N.A; Jane McGowan, C.R.N.A., Pediatrics; Inessa Oks, C.R.N.A., Pediatrics; and Tatyana Tenenboym, C.R.N.A.

These new recruits — along with our existing medical staff and our phenomenal nursing corps — allow us to see and treat more patients like Greg. This year Mass. Eye and Ear physicians, nurses and clinicians saw more patients than ever before. For the third year in a row surgical volume increased, this time by 2%, and the number of outpatient visits increased by 12%.

As our numbers of patients grow, our commitment to their safety remains our paramount concern. In 2010, our surgical and nursing staff launched a major new patient safety initiative: the Surgical Checklist. This is a simple, yet critical step in which all Mass. Eye and Ear surgical teams take a few moments before surgery to run down a checklist. It is now considered a proven method for avoiding critical human error in surgery.

Finally, we are gratified to be recognized once again for our clinical excellence in *U.S. News & World Report* magazine's Best Hospitals Survey. Ranked in partnership with Mass General whose patient population we now formally serve, the Department of Otolaryngology rose to a second-place ranking, up from fourth. The Department of Ophthalmology held its rank at fourth in the nation. Our caregivers are the heart and soul of highest quality care, and it is rewarding to have their hard work held in high esteem.



T HOSPITALS

EAR, NOSE, & THROA

Rank	Hospital	U.S. News Score	Reputa (%
1	Johns Hopkins Hospital, Baltimore	100.0	4
2	Massachusetts Eye and Ear Infirmary, Mass. Gen. Hosp., Boston	80.5	2
3	UPMC-University of Pittsburgh Medical Center	80.3	
4	University of Iowa Hospitals and Clinics, Iowa City	78.9	
5	Mayo Clinic, Rochester, Minn.	78.4	
6	University of Texas M.D. Anderson Cancer Center, Houston	78.2	
7	Hospital of the University of Pennsylvania, Philadelphia	71.8	
8	Cleveland Clinic	68.3	
9	University of Michigan Hospitals and Health Centers, Ann Arbor	66.2	
10	Barnes-Jewish Hospital/Washington University, St. Louis	66.	
	ld Reagan UCLA Medical Center, Los Angeles	61.	
	ttering Cancer Center, New York	5	
	Center, Seattle	5	

OPHTHALMOLOGY

Rank	Hospital
1	Bascom Palmer Eye Institute at the Uni
2	Wilmer Eye Institute, Johns Hopkins Ho
3	Wills Eye Hospital, Philadelphia
4	Massachusetts Eye and Ear Infirmary, N
5	Jules Stein Eye Institute, UCLA Medical
6	University of Iowa Hospitals and Clinics
7	Duke University Medical Center, Durhan
8	Doheny Eye Institute, USC University Ho

(left) U.S. News & World Report *magazine recognized Mass. Eye and Ear in the 2010 Best Hospitals issue. Mass. Eye and Ear ranked second in Ear, Nose and Throat and fourth in Ophthalmology.*

> "When you save a life, you save the future."
>
> — Ray Tye

changing lives

WITH A LITTLE HELP FROM OUR FRIENDS

Twelve-year-old Andrea Nemethi (pictured above with her host mother, Camelia Rosca) traveled from Romania to get treatment that wasn't available in her home country. The girl had a tumor under her right eye that had grown to the size of a large grapefruit, destroying the eye and pushing it out of the socket. Doctors from her home country told her family she had an inoperable tumor and gave her months to live. The benign tumor continued to grow for eight years with no help in sight until Andrea's teacher contacted Dr. Aaron Fay's office at Mass. Eye and Ear and asked for help. The Romanian community raised funds to bring Andrea and her father here for treatment. During several surgeries, Dr. Fay removed the tumor, reconstructed her orbital area, and implanted a prosthetic eye. The care was donated by the hospital and Dr. Fay in honor of the late Ray Tye, the founder of the Ray Tye Medical Aid Foundation, who has helped children from all over the world experience life.

research and academic leadership

Jo Ann Preece has a spring in her step and a sparkle in her eye despite living with end-stage age-related macular degeneration. The vibrant 84-year-old had a miniature telescope implanted in her eye in 2003 during a clinical trial at Mass. Eye and Ear. Thanks to the implant, which was approved by the FDA in 2010, Jo Ann can see her grandchildren's smiling faces.

Mass. Eye and Ear is helping people like Jo Ann live independently and fully experience life through its robust bench-to bedside-research program. Our educators and clinicians also help people all over the world through the teaching they do as part of our affiliation with Harvard Medical School.

Here are some examples of Mass. Eye and Ear's academic and research excellence in fiscal year 2010:

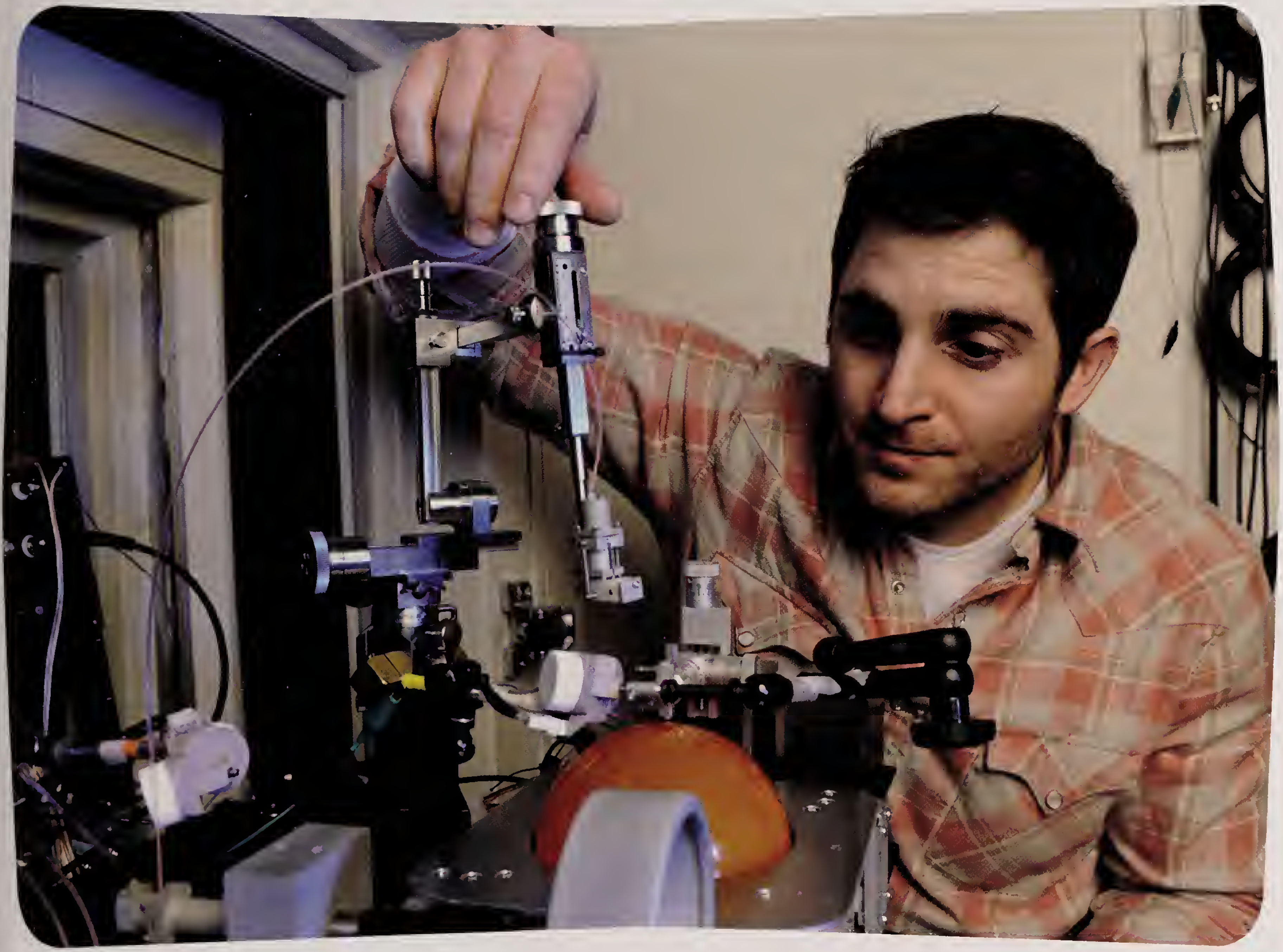
ADVANCING RESEARCH

In a challenging and competitive grant environment, our researchers submitted 124 grant proposals, received 60 new awards, and secured more than $36 million in new grants (up from $33 million in FY '09 and from $26 million in FY 08) to support their work.

Notable grants include:

- Renewal from the National Institutes of Health (NIH) for the Harvard Clinical Vision Scientist Development Program (K-12), which permits protected research time for young clinician-scientists.
- Dr. Michael Gilmore was awarded three NIH grants for the study of bacterial infection, the largest which aims to solve the growing threat of resistant bacteria, including methicillian-resistent S. Aureus (MRSA).
- Dr. Christopher Hartnick received an NIH grant for a clinical trial to study voice therapy for children with vocal nodules.
- Dr. Louis Pasquale secured an NIH grant to study gene-environment interactions in glaucoma.
- Dr. Michael McKenna received an NIH grant to develop a drug-delivery system to prevent sensorineural hearing loss.
- Dr. Tessa Hadlock was awarded a new NIH grant to study surgical and rehabilitative management of facial nerve injury.

Hearing researcher Dan Polley, Ph.D., is working in Mass. Eye and Ear's Eaton-Peabody Lab to understand the science of brain change as it relates to hearing. His findings could one day allow us to provide better treatment and intervention for people with hearing loss.



- Albert Edge, Ph.D., was awarded a new grant from the NIH to continue his focus on stem-cell based therapies for sensory hearing loss.

- Dr. Saumil Merchant successfully renewed the NIH contract for the Temporal Bone Registry, which helps researchers from all over the world better understand the mechanisms of deafness.

- Six new ophthalmology clinical trials were initiated, ranging from treatments for "pink eye" to evaluating new drugs for retinal diseases to assessing a drug to treat chemotherapy-induced eyelash loss in children.

Some additional research successes include:

- Research featured in the *Proceedings of the National Academy of Sciences (PNAS)* that described the mechanism in which multi-drug resistant bacteria has evolved from harmless bacteria in the gut to a leading cause of drug-resistant hospital infection.

- A cover story in *Neuron* which described research that revealed how temporary hearing deprivation, such as that caused by ear-infections in childhood, can lead to a "lazy ear."

- Research identifying genetic markers highly associated with age-related macular degeneration.

- Development of a novel animal model for neurotrophic corneal disease, one of the leading causes of non-healing surface defects in the cornea of the eye.

- Research in collaboration with Draper Laboratory that successfully demonstrated that a drug-delivery device for use in the inner ear worked in an animal model.

- Research done in collaboration with Brigham and Women's Hospital that shows hearing loss in U.S. teens has increased in prevalence in the last 15 years. This work was featured in the Journal of the American Medical Association.

- Research identifying the phenomenon of neuroprotection in angiogenesis pathophysiology of the retina in the eye and its use as a possible target for new treatments.

- Clinical trial held only at Mass. Eye and Ear that studied a novel drug administered as eye drops to treat the signs and symptoms of patients with certain ocular surface diseases that cause dry eyes.

We wish to express our appreciation to the foundations and organizations that support our research efforts. Your support is needed now more than ever and we appreciate all that you do to advance science at Mass. Eye and Ear.

ACADEMIC LEADERSHIP

In addition to conducting research to find better treatments and cures, our physicians are also teaching the medical professionals of tomorrow. We are pleased to note that three individuals were formally named to endowed chairs at Harvard Medical School. Congratulations to Michael S. Gilmore, Ph.D., first incumbent of the Sir William Osler Professorship in Ophthalmology; Evangelos S. Gragoudas, M.D., first incumbent of the Charles Edward Whitten Professorship in Ophthalmology; and Richard H. Masland, Ph.D., formally named as the David Glendenning Cogan Professor of Ophthalmology.

We also celebrated three promotions to full professor at Harvard Medical School. Congratulations to Michael Cunningham, M.D., Professor of Otology and Laryngology; Bertrand Delgutte, Professor of Otology and Laryngology; and Conrad Wall III, Ph.D., Professor of Otology and Laryngology.

EDUCATIONAL HIGHLIGHTS

We held courses that drew faculty and attendees from all over the world. We launched several new educational initiatives, including our first International AMD Symposium, a collaboration with Schepens Eye Research Institute, and a new course, "Stroboscopy for Voice Disorders." We conducted our first annual joint Grand Rounds with Aravind Eye Hospital in India and plan to do a similar session with Singapore Eye Hospital in the coming year. These educational ventures — and the many others that are ongoing — build upon the enduring excellence of our teaching program with their inclusion of the world's elite educators and researchers in our grand rounds and regular lecture series.

Our faculty won awards and prizes this year from many organizations, including the Retina Society, Research to Prevent Blindness, the Helen Keller Foundation, Association for Research and Vision in Ophthalmology, Harvard Medical School, Women in Ophthalmology, Alcon Research LTD, Massachusetts Lions Clubs, American Auditory Society, American Academy of Audiology, and American Association of Otolaryngology-Head and Neck Surgery. For a full report, please visit MassEyeAndEar.org.

LOOKING FORWARD

We are very proud of the pioneering research done by all of our scientists and researchers and of our tradition of research to transform medical care. We look forward to providing our investigators with a better collaborative environment in our planned new research building on Mass. Eye and Ear's main Boston campus. This state-of-the-art facility will only strengthen our mission to improve clinical care, train the next generation of medical leaders, and develop new treatments and cures for Jo Ann and others who suffer from debilitating diseases.

> “Teaching and research are keys to achieving the hospital’s mission. These endeavors can ultimately lead to better care not only for our own patients, but for patients worldwide.”
>
> — **Dr. John Loewenstein, Residency Program Director, Harvard Medical School Ophthalmology Residency**

academic excellence

EDUCATING FUTURE PHYSICIAN LEADERS

Deciding where to complete a medical residency is no simple task. But when asked “Why was Mass. Eye and Ear on your list?” second-year ophthalmology resident Nancy Huynh (pictured above on the right with Dr. Angela Turalba) responded without hesitation. “I’d done some training at Mass. Eye and Ear while I was a medical student at Harvard and I developed a great teaching relationship with my preceptors,” she says. Now in her second year of residency at the hospital, one of her proudest accomplishments is developing her proficiency in cataract surgery. And it was one of Nancy’s preceptors in medical school, Dr. John Loewenstein, who helped to develop the computer simulated cataract surgery technology which helped her learn those skills. Learn more about Nancy’s Mass. Eye and Ear’s residency program experience by visiting our YouTube Channel at http://www.youtube.com/user/MassEyeAndEar.

financial health

> *"More margin, more mission"*
> — John Fernandez, President & CEO

A BETTER BOTTOM LINE

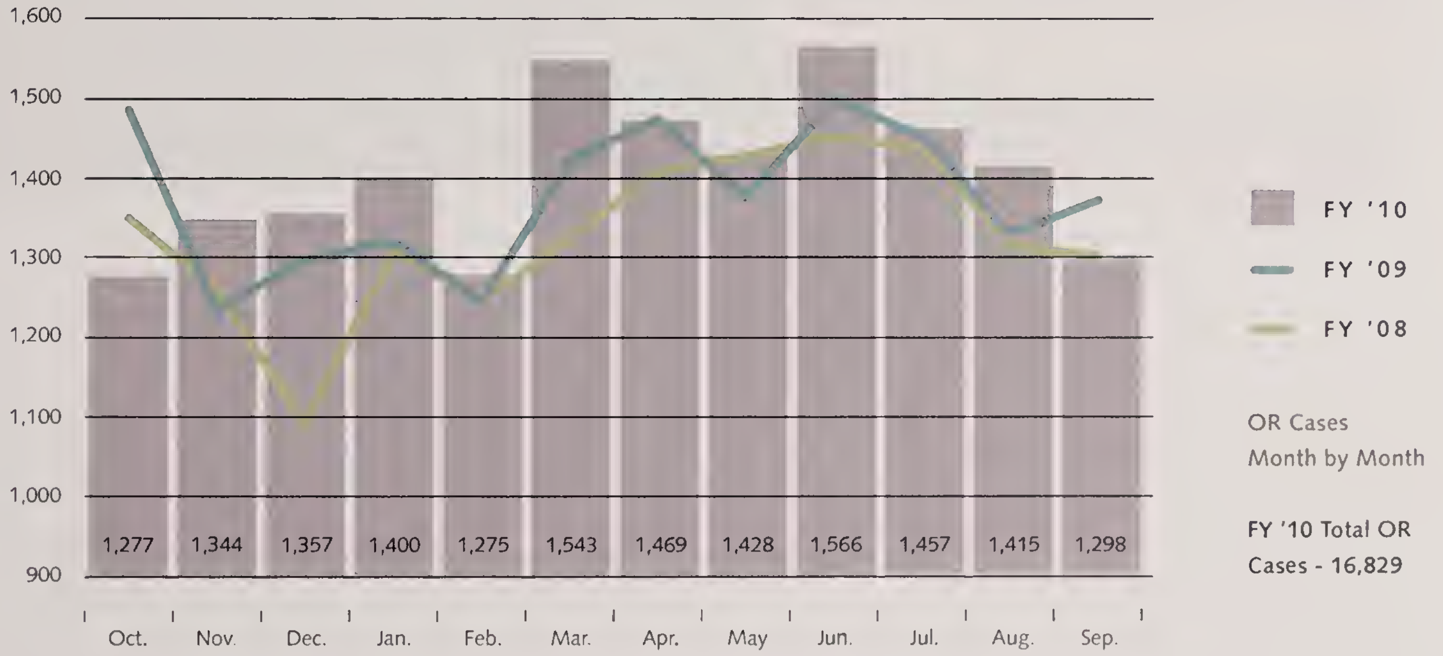
2010 proved a landmark year for Mass. Eye and Ear. Increases in surgical and patient volume led to a healthy operating surplus and a margin of $3.5 million (see page 22).

The volume increases are just one part of Mass. Eye and Ear's 10-year strategic plan. Another key element includes renovation and growth for the hospital's main campus. After many months of planning, Mass. Eye and Ear's leadership team succeeded in improving the hospital's bond rating. This laid the groundwork for a successful $64 million bond financing, which will provide an infusion of capital to fund many new projects and improvements. Federal stimulus money led to another very strong financial year for our research community.

In 2010, our scientists secured 60 new grants totaling $36 million, including almost $4 million from the federal stimulus program. Below is total research funding spent in FY '10.

Additionally, in 2010 Mass. Eye and Ear's indirect reimbursement rate grew by 6% to an unprecedented 57%. The departments also successfully recruited two new investigators, which led to an increase in the overall grant budget portfolio.

SURGICAL CASES MONTH BY MONTH



OR Cases
Month by Month

FY '10 Total OR
Cases - 16,829

Quality care is caring and competent clinical staff. It's also embracing technologies to help provide that care. Above, Chief of Anesthesia Dr. Sunil Eappen and Nurse Manager Kendra Polefka, R.N., stand in the new Surgical Area Command Center outfitted with leading-edge technology to monitor surgeries for better quality, efficiency and the best possible patient care.

PHILANTHROPY

None of Mass. Eye and Ear's financial success would be possible without the incredible generosity of our friends. In addition to another outstanding golf tournament, Mass. Eye and Ear launched a new fundraising gala to support our pediatric care and research. *Sense-ation!* was an inspirational evening and proved an astonishing success: more than $1 million was raised for Mass. Eye and Ear's new *Curing Kids Fund*. As we said on the evening of Oct. 13, "The kids can't thank you enough!"

We are also deeply grateful to friends and foundations, who led the way in supporting life-changing research and care. We have listed a few of their remarkable gifts here:

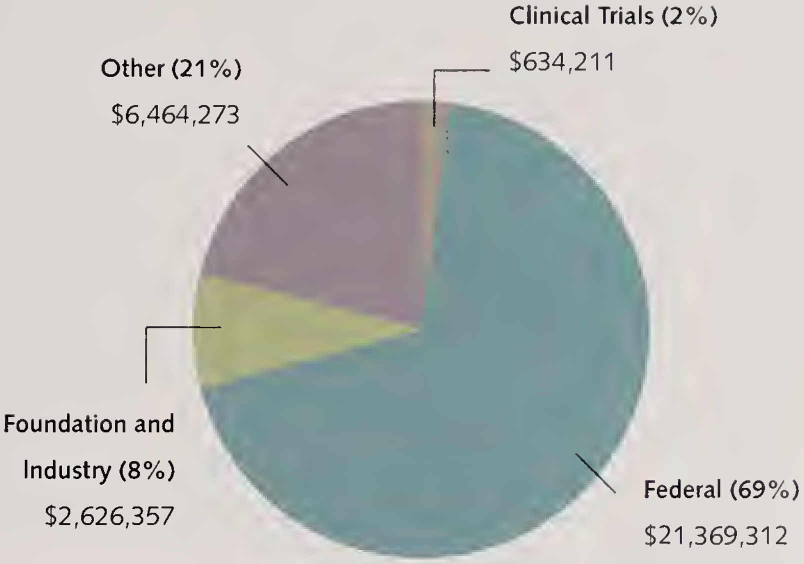
- A grant of $950,000 from **The Solman & Libe Friedman Foundation** to help establish the Solman and Libe Friedman Professorship in Ophthalmology at the Harvard Medical School based at Mass. Eye and Ear.

- Gifts totaling $610,000 from **Norman Knight** to establish the Norman Knight Nursing Center, to increase the endowments of the Norman Knight Partnership Fund, the Norman Knight Nursing Scholarship Fund, and Norman Knight Leadership Development Awards, and for top level sponsorship of the *Sense-ation!* Gala and the *Curing Kids Fund*.

- Gifts totaling $550,000 from **Frederick and Ines Yeatts** to support research in hearing led by Zheng-Yi Chen, Ph.D., and research in age-related macular degeneration led by Drs. Joan Miller and Demetrios Vavvas.

COMBINED RESEARCH COSTS BY SOURCE – FY2010

(Direct and Indirect)



COMBINED RESEARCH EXPENDITURES BY DEPARTMENT

(Direct and Indirect)

	FY 2009	FY 2010
Ophthalmology	$12,120,259	$14,957,104
Otolaryngology	$13,571,705	$16,137,049
Total	**$25,691,964**	**$31,094,153**

- An estate gift of more than $1,000,000 from the late **Eleanor T. Marshall** to establish the Eleanor Tudor Marshall Memorial Fund for Macular Degeneration Research.
- A gift of $331,828 from the **estate of Frances Evans** to support clinical research in ophthalmology.
- A gift of $250,000 from the **Tillotson Corporation** to support the purchase of a confocal microscope to be used by the scientists of the Neil and Louise Tillotson Laboratory for Cell Biology of the Inner Ear to advance hearing research.
- A pledge of $250,000 from **Jennifer and Jonathan Uhrig** to support the patient care, research and teaching mission of the hospital.
- A grant of $250,000 by the **Edward N. and Della L. Thome Memorial Foundation** for research of genetic and environmental factors related to macular degeneration.
- A grant of $175,000 from the **Massachusetts Lions Eye Research Fund, Inc.** to support the purchase of a confocal microscope to accelerate sight-saving eye research.
- A gift of $150,000 from the **estate of Joseph Qualantona** for unrestricted support of the hospital.
- Gifts from **Paul Margolis** totaling $131,000 to support research in glaucoma led by Drs. Louis Pasquale and Janey Wiggs.
- A grant of $100,000 from the **Ellison Foundation** to support research in age-related and noise-induced hearing loss led by Zheng-Yi Chen, Ph.D.
- A grant of $100,000 from **Research to Prevent Blindness** to advance innovative eye research.

THANK YOU

Shortly after the close of FY '10, our Vice President Finance and Chief Financial Officer Peter Chinetti announced that he will leave Mass. Eye and Ear after 21 years on the job. Peter played a key role in the development of Vision 2020 and this year was instrumental in the improved bond rating and subsequent bond financing. Most important, he leaves Mass. Eye and Ear in vastly improved financial condition than when he arrived in 1989. We thank him and wish him very well in all of his future endeavors.

We will continue to set aggressive margin targets, as increased margin allows us to reinvest in Mass. Eye and Ear's mission. We are so proud of the research, teaching and patient care performed by Mass. Eye and Ear physicians, scientists and caregivers. We look forward to providing our staff with state-of-the-art space and technology to help them achieve their common goal — helping patients.

SURGICAL VOLUME

Inpatient Surgical Services Total:	1,189
Ambulatory Surgical Services Total:	20,805

OUTPATIENT DEPARTMENTS

Eye Services Total:	139,242
ENT Services Total:	130,166
Emergency Department Services Total:	19,324
Inpatient Care:	42 beds
Total Discharges:	1,529

sense-ational!

A FUNDRAISING HIT...

Mass. Eye and Ear's Sense-ation! gala lived up to its name, and then some. The inaugural event, held at the Renaissance Boston Waterfront Hotel, introduced the hospital's Curing Kids Fund. With help from more than 500 of the hospital's friends, guests and supporters, including Joey McIntyre and the New Kids on the Block, the gala raised more than one million dollars to benefit pediatric patient care and research at the hospital. Special thanks to our Event Chairs: Wyc and Corinne Grousbeck, Diane E. and Al Kaneb, Rich and Nichole Aldrich, Lily and Tim Bentas, Dr. Leila Mankarious and Jamie Rome.

community outreach

> *"It's a great feeling to know that Mass. Eye and Ear supports the students in the Year Up program by helping them see."*
> — Peter Satchell, Mass. Eye and Ear Desktop Support Technician and Year Up Boston graduate.

During the current challenging economy, Mass. Eye and Ear's Community Benefits program is more important than ever. From education and disease prevention to clinical care, our service to our community pays homage to the charitable care mission upon which the hospital was founded. Here are some of the ways we helped meet the needs of our local communities this year.

As a leader in research and treatment of head and neck cancers, Mass. Eye and Ear collaborated with the Head and Neck Cancer Alliance and held a free clinic to provide screenings for oral, head and neck cancers. Our social workers hosted an information table in collaboration with Mass General's chapter of Support for People with Oral Head Neck Cancer, providing education and awareness about these types of cancers.

Education and increasing awareness continued to be a strong part of our Community Benefits program. We participated in the Partners/WHDH Health and Fitness Expo in Boston, at which our audiologists and physicians made their expertise available to consumers. Similarly, during our annual educational seminars — the Sinusitis Forum and a special tenth anniversary program of our Have You Heard Public Forum on Hearing and Balance — our clinicians and researchers educated interested and engaged audiences of community members.

While education and awareness remained a priority, so did providing medical care to vulnerable members of our community. We performed vision and hearing screenings for elementary and middle-school students at the Neighborhood House Charter School in Dorchester for the fifteenth year. Our collaboration with Camp Harbor View continued, with our ophthalmologists performing vision screenings for 300 campers from at-risk Boston neighborhoods. In addition, our partnership with the Vision Coalition Massachusetts and Year Up Boston programs provided comprehensive eye exams and any needed eyeglasses to Year Up students, helping to improve career training for young adults in need.

Our community benefits program continues to be a worthy endeavor. This year alone, our specialists identified a number of conditions that wouldn't have been diagnosed without a thorough exam. We are in the process of evaluating our community benefits program. In the coming year, we're looking forward to doing more for those who need our services most.

For a list of community benefits activities, visit MassEyeandEar.org.

Year Up Boston student Alan Moronta is looking forward to seeing things more clearly after picking up his new eyeglasses from Mass. Eye and Ear's Optical Shop. Alan received a complete eye exam and eyeglasses thanks to the collaboration between the hospital and Vision Coalition Massachusetts. (photo by Richard Howland courtesy of Vision Coalition Massachusetts)

Financial Statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. — Combined Balance Sheet as of September 30, 2010

ASSETS

Current Assets	
Cash and Cash Equivalents	4,744,388
Short-Term Investments	-
Assets Whose Use is Limited	26,787,513
Patient Accounts Receivable (Less Allowance for Doubtful Accounts $4,178,034)	22,869,938
Other Current Assets	9,985,641
Total Current Assets	**64,387,480**
Assets Whose Use Is Limited	
Construction Fund	28,468,222
Capital Interest Fund	5,191,181
Special Cash and Capital Reserves	5,146,250
QLT Funds	36,500,381
Under Indenture Agreement	5,267,021
Total Assets Whose Use is Limited	**80,573,055**
Investments	106,333,886
Pledges Receivable, Net	1,081,821
Remainder Interest in Charitable Trusts	339,588
Beneficial Interest in Trusts	13,766,525
Property, Plant & Equipment (Net of Depreciation of $200,024,712)	106,500,209
Other Assets	
Intangible Assets (Net of Amortization of $1,668,363)	1,806,616
Deposits	1,820,000
Tax deferred liability plan asset	159,341
Total Assets	**376,768,521**

LIABILITIES AND NET ASSETS

Current Liabilities	
Current Portion of Long-Term Debt and Capital Leases	3,363,629
Accounts Payable and Accrued Expenses	27,348,423
Accrued Interest	233,014
Estimated Third Party Settlements	2,990,183
Total Current Liabilities	**33,935,249**
Long-Term Debt and Capital Leases, Less Current Portion	89,386,628
Asset Retirement Obligation	441,483
Deferred QLT Revenue	55,826,537
Accumulated Post-Retirement Benefit Obligation	147,900
Professional Liability Reserve	1,418,958
Tax Deferred Liablility Plan	159,341
Accrued Pension Costs	30,509,030
Annuities and Unitrusts Payable	801,220
Total Liabilities	**212,626,346**
Net Assets	
Unrestricted for General Operations	39,719,004
Board Designated	39,399,098
Total Unrestricted Net Assets	**79,118,102**
Temporarily Restricted	36,558,280
Permanently Restricted	48,465,793
Total Net Assets	**164,142,175**
Total Liabilities and Net Assets	**376,768,521**

financial statements

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. — Combined Statement of Revenue and Expenses of the General Fund as of September 30, 2010

NET PATIENT REVENUE

Net Patient Service Revenue	176,455,583
Other Operating Revenue (Including $33,857,108 from Research, Contributions and Grants)	69,807,266
Total Operating Revenue	**246,262,849**

A copy of the audited financial statements is available upon request from the Office of Public Affairs, (617) 573-3340.

OPERATING EXPENSES

Patient Care and Clinical	139,906,914
General and Administrative	68,718,188
Research	32,174,771
Fundraising	1,130,980
Education	2,448,083
Total Operating Expenses	**244,378,936**
Income from Operations	1,883,913
Gains from Operations	**1,883,913**
Other Gains	1,652,501
Excess of Revenues Over Expenses	**3,536,414**
Other Support	550,046
Increase in Unrestricted Net Assets	**4,086,460**
Pension and Postretirement-related charges other than net periodic pension cost.	(7,171,711)
Decrease in Unrestricted Net Assets	**(3,085,251)**
In addition, the Foundation received the following restricted funds income: Gifts and Bequests	4,594,759
Investment Income:	
Investment Income (loss), net of investment expenses	(1,317,165)
Realized Gains on Investments	3,637,731
Unrealized Loss on Investments	(529,940)
Gain on Beneficial Interest in Trusts	579,926

employee stars

January:

Gilbert Samano Jr.

Central Registration

February:

Antoinette Kelton

East Bridgewater

April:

Jeanne Ferrara

Cornea Services

May:

Patricia Raymond

Ophthalmology

June:

Brian Moore-Ward

Back End Billing

July:

Carolyn Silva

Voice and Speech Lab

August:

Cassie Cole

Medical Surgical Pediatrics

September:

Chris Scarpino

Eaton-Peabody Lab

October:

Errol Phillip

Anesthesia

November:

Jimmy Chase

Security

December:

Stephen Chiavelli

Maintenance

**Our March employee of the month is no longer an employee at Mass. Eye and Ear*

benefactors

The Reynolds Society

Named in honor of Edward Reynolds, M.D. (1793-1881), co-founder of the Massachusetts Eye and Ear Infirmary, the Reynolds Society was established in 1986 to recognize those special friends who contribute at a leadership level during the fiscal year. Mass. Eye and Ear thanks the following Reynolds Society members for their gifts and pledges of $2,500 or more from Oct. 1, 2009 through Sept. 30, 2010. Senior hospital-based medical staff and senior managers who give $2,000 or more and other hospital-based medical staff and employees who give $1,000 or more are also recognized as Reynolds Society members.

Outright Gifts and Pledges

Gifts of $500,000 - $999,999

The Solman & Libe Friedman Foundation
Norman Knight
Frederick and Ines Yeatts

Gifts of $100,000 - $499,999

Alzheimer's Association
John and Claire Bertucci
Ellison Foundation
Dr. Ralph & Marian Falk Medical Research Trust
The Tamra F. Gould and Howard Amster II Philanthropic Fund of the Jewish Community Federation of Cleveland
Diane E. and Albert J. Kaneb
Mr. Paul A. Margolis
Massachusetts Lions Eye Research Fund
Mr. Lakshmi N. Mittal
Research to Prevent Blindness
Mr. and Mrs. Michael C. Ruettgers
Edward N. and Della L. Thome Memorial Foundation
Tillotson Corporation
Jennifer and Jonathan Uhrig
Helene and Grant Wilson
Anonymous (2)

Gifts of $50,000 - $99,999

The Alcon Foundation, Inc.
Richard and Nichole Aldrich
Ms. Elizabeth Bauman and Mr. Luke Gullick
Attorney and Mrs. Efthemios J. Bentas
John and Rita Cannistraro
Nelson and Ruth Darling
Marion T. Davidson
Michael and Betsy Dingman
Grousbeck Family Foundation
Hamilton H. and Mildred H. Kellogg Charitable Trust
Medtronic USA Inc.
Mr. and Mrs. David A. Neskey
Sara Elizabeth O'Brien Trust
The Simms-Mann Family Foundation
Stranahan Foundation
Anonymous (1)

Gifts of $25,000 - $49,999

American Otological Society, Inc.
Mr. and Mrs. Jorge E. Bacardi
Mr. Robert P. Bauman
Robert N. Boucai
Mr. and Mrs. Thomas F. Boyle
Capita Foundation
Herbert G. Chambers
Citizens Bank
Linzee and Beth Coolidge
William H. Darling and Elizabeth A. Breuhaus
Deafness Research Foundation
Charles E.W. Grinnell Fund
Norman and Lela Beren Jacoby Foundation
Jonathan W. Kutchins
Leila Mankarious, M.D. and Jamie Rome
Ms. Sylvia Margolis
Dr. and Mrs. Ralph Metson
Dr. Joan W. Miller and Prof. John B. Miller
Annette and Dan Nova
Carol Sawyer Parks
William E. Roman
Michael & Helen Schaffer Foundation, Inc.
Susan Stoddart and Christian Snook
Mr. and Mrs. Frederick G.P. Thorne
Eileen and Ray* Tye
Mr. David J. Vargo and Ms. Sheila A. Collins
Anne and Monte Wallace
Henry N. Wheeler
Shelby R. Wilkes, M.D., M.B.A. and Jettie M. Burnett, M.D.
Anonymous (2)

Gifts of $10,000 - $24,999

The Abelson Family
Advanced Bionics Corporation
Samuel and Nancy Jo Altschuler
Robert and Michelle Atchinson
Lucille M. Batal
Dr. and Mrs. Jeffrey P. Buzen
Cresa Partners
Mr. and Mrs. Robert C. Crisafi
Charles and Patricia Curtis
Frederick V. Davis Trust
Mr. Gerard F. Doherty
Philip DuBois
Caleb C. and Julia W. Dula Educational and Charitable Foundation
Ms. Candace E. Dyal
Mrs. William Ellison
Harvey W. Freishtat
The Dr. Albert R. Gillespie and Louise C. Gillespie Charitable Trust
Dr. and Mrs. Evangelos Gragoudas
The Grubman Graham Foundation, Inc.
Mr. and Mrs. Donald B. Green
Karen and Mark V. Green
Paul and Margaret Guerin
Natalie Z. Haar
Joseph W. and Anna P. Haley
Drs. Mark S. Hughes and Delia N. Sang
J.G. Machine Co., Inc.
JGA Foundation
John and Kathy Kavanagh
Kenneth R. Kenyon, M.D.
Mr. and Mrs. Robert K. Kraft
Jeffrey C. Lamkin, M.D.

Mrs. Brendan D. Leahey
Susan and Matthew Lorber
Mr. Hugo R. Mainelli, Jr.
Maiuri Electrical Corporation
Mrs. Nancy L. Marks
McDermott, Will & Emery Charitable Foundation
Mr. and Mrs. Joseph Michelson
The Robert R. Mohr Family
Robert E. Naser
Netezza Corporation
Karen L. O'Connor, Ph.D.
G. Gorham Peters Testamentary Trust
Sandy and Herb Pollack
Phyllis G. Redstone
Sarah and Joseph Rizzo, M.D. •
David W. Scudder
Shawmut Design and Construction
Charles D. Sheehy, Inc.
Mr. and Mrs. Stanley J. Sidel
Herbert Silverstein, M.D.
Richard J. Simmons, M.D.
Suffolk Healthcare
Mr. and Mrs. Stephen G. Traynor
Tsoi/Kobus & Associates, Inc.
Wat and Jane Tyler
Veolia Energy
Eric Welsh
Janey L. Wiggs, M.D., Ph.D. and Robert J. D'Amato, M.D., Ph.D.
John Wise
Anonymous (1)

Gifts of $2,500 - $9,999

Tony and Mary Adamis
Peter and Widgie Aldrich
Mr. and Mrs. Judd Alexander
ALPFA
Drs. Dimitri and Nathalie Azar
Mr. Kenneth Baker •
John C. Barber, M.D.
Mr. and Mrs. Steven Barnes
Mr. Ronald Bartlett
The Beal Companies, LLP
Dr. and Mrs. Barry J. Benjamin
Alexander Bernhard and Myra Mayman
Frank Stanley Beveridge Foundation, Inc.
Mr. and Mrs. Robert M. Biggio
Big Idea Graphics
Robert C. Bishop
Mr. and Mrs.* Richard W. Blackburn
Blue Cross/Blue Shield of Massachusetts
The Boston Foundation
Georgette and Sol Boucai
Mr. and Mrs. Edward P. Bousa
Dr. and Mrs. David M. Bowling
Ms. Marilyn Brachman Hoffman
Dorothea and Shelly Buckler
Drs. Nicolas and Maha Bu-Saba
C & G Associates, Inc.
Frances F. Campion
Mr. and Mrs. Francis R. Carroll
CBT Architects
Michael A. Chang, M.D.
Stanley Chang, M.D.
Charles River Associates, Inc.
Ms. Annie Chen •
Chesterton Family Foundation
Children's Hospital Ophthalmology Foundation
Peter J. Chinetti and Jill C. Richardson
Coast to Coast Medical, Inc.
The Commonwealth Fund
Mrs. Tonia Conover •
Herbert I. Corkin
Mrs. Julie-Anne Cote •
Ms. Lindsey Courchesne •
Ms. Tina Damalas •
Dr. Reza and Ms. Azhand Dana
Mr.* and Mrs. Disque D. Deane
Daniel G. Deschler, M.D. and Eileen E. Reynolds, M.D.
Mr. John D. DesPrez, III
Diversified Project Management
Claes and Carin Dohlman
Alice Willard Dorr Foundation
Mr. Kenneth Dowling •
Mel and Carolyn Drapkin
Driscoll-O'Neil Charitable Foundation
Dr. and Mrs. Thaddeus P. Dryja
Duke Realty
Sunil Eappen, M.D.
Dr. Roland D. Eavey and Dr. M. Sheila Desmond
Engineered Solutions, Inc.
Epsilon Associates, Inc.
Esphera3
Mrs. JoEllen Falk •
Mr. and Mrs. Gerald Feldman
John and Vance Fernandez
Dimitra Filippou
Mr. Jeffrey Fine •
Miriam Finn Sherman •
Fish & Richardson
Jennifer Mugar Flaherty and Peter G. Flaherty
Ms. Lisa Fleming •
Mr. Russell Fleming •
Samuel and Nancy Fleming
Ms. Karyne Flores •
Dr. and Mrs. C. Stephen Foster
Mr. Trevor G. Fox
Joan and Richard Freedman
Richard R. and Elaine Gacek
Mrs. Yvonne Garcia •
Paul and Helen George
Mrs. Tara Giardina •
Mr. Charles Gillis •
Fred and Cathy Grein
Grimshaw-Gudewicz Charitable Foundation
Harold Grinspoon
Cynthia L. Grosskreutz, M.D., Ph.D. and Bradley T. Hyman, M.D., Ph.D.
Mrs. Donnalee Guerin •
Charles & Dorothy Gullickson Fund for Social Change
Grant and Lara Gund
William and Malora Gundy
Harvard Pilgrim Healthcare
HDR Architecture, Inc.
Health Policy Associates, Inc.
Michael E. Hettinger, M.D.
Lyle Howland and Jack Manning
B. Thomas Hutchinson, M.D.
Mr. Edward W. Johnson •
Mrs. Katherine R. Johnson •
Mr. and Mrs. Leonard Jolles
Ms. Wendy Jolles and Ms. Suzanne Lowell
Mrs. Robert C. Jordan
Bob and Letitia Jordan
Mr. and Mrs. Stephen R. Karp
Ms. Cheryl Keamy and Mr. Paul J. Pantano, Jr.
Rosa Y. Kim, M.D. and Stella K. Kim, M.D.
Kimball Office
Gilbert H. Kliman, M.D.
Ms. Stephanie Klotz
Drs. Paul M. and Laurie F. Konowitz
Mr. George Lambert •
Ms. Ingrid Lapsa •
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Drs. John and Marissa Lazor
Lee Kennedy Co., Inc.
Dr. and Mrs. Michael A. Lemp
Simmons Lessell, M.D.
Shaun and Kathleen Levesque
Daniel Lieman, Ph.D. •
Mr. and Mrs. Edward F. Lindeman
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Louise and John Loewenstein
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Carolyn and Peter S. Lynch
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Dick and Pat MacKinnon
Ms. Joan W. MacPherson
Ben B. Mahan, M.D.
Mr. and Mrs. John H. Marenghi⸫
David and Terry Marotta
Mary T. Marshall
Massachusetts General Hospital
Dr. and Mrs. Bo McClerkin
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Jennifer and Alexander Mclin
Mr. James McLoughney⸫
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Dale C. Oates, M.D.
Michael J. Price, M.D.
Michael B. Raizman, M.D.
Peter A. Rapoza, M.D.
Elias Reichel, M.D.
Martin Richler, M.D.
Jason Rothman, M.D.
Deborah K. Schlossman, M.D.
Sarkis H. Soukiasian, M.D.
Ernest A. Sutcliffe, M.D.
William M. Tang, M.D.
Gerald G. Tanguilig, M.D.
Nigel Timothy, M.D.
John V. Thomas, M.D.
Kailenn Tsao, M.D
George A. Violin, M.D
Lawrence E. Weene, M.D.
Carolyn Wu, M.D.
David Yi, M.D.
Stephen A. Youngwirth, M.D.
Deborah E. Zuckerman, M.D.

Emeritus Staff

Chester J. Boulris, M.D.
Jack F. Bowers, M.D.
Harry Braconier, M.D.
Richard Dallow, M.D.
Elliot M. Finkelstein, M.D.
George Garcia, M.D.
John R. Gehring, M.D.
Firmon E. Hardenbergh, M.D.
Philip J. Harris, M.D.
Roland Houle, M.D.
David Hutchison, M.D.
Robert Kinder, M.D.
Eeva-Liisa Martola, M.D.
Peter B. Mooney, M.D.
George Olive, M.D.
Bernard Schwartz, M.D., Ph.D.
John G. Sebestyen, M.D.
Richard J. Simmons, M.D.

Honorary Staff

John M. Carroll, M.D.
Robin Cook, M.D.
Ephraim Friedman, M.D.
Irving L. Pavlo, M.D.
Alfred W. Scott, M.D.
Paul F. Vinger, M.D.

Consulting Staff

Lloyd M. Aiello, M.D.
Margaret McLaughlin, M.D.

Education

Associate Chief for Graduate Medical Education, Residency Program Director

John I. Loewenstein, M.D.

Associate Residency Program Director

Carolyn E. Kloek, M.D.

Director of Medical Student Education

Simmons Lessell, M.D.

Director of Fellowship Training

Dean M. Cestari, M.D.

Assistants in Ophthalmology/ Clinical Fellows (Academic Year 2009-2010)

Jared Ament, M.D.
Hasan Bahrani, M.D.
Netan Choudhry, M.D.
Ahad Fazelat, M.D.
Ming He, M.D.
Gena Heidary, M.D., Ph.D.
Maria Jancevski, M.D.
Maria S. Jardeleza, M.D.
Anne Keating, M.D.
Ginny Kullman, M.D.
Radhika Kumar, M.D.
Yannek Leiderman, M.D., Ph.D.
Ann-Marie Lobo, M.D.
Sandra Montezuma, M.D.
Shuchi Patel, M.D.
Marc-Andre Rheaume, M.D.
Babak Jian Seyedamahdi, M.D.
Tarek Shazly, M.D.
Rebecca Stacy, M.D., Ph.D.
Tasha Tanheco, M.D.
Aisha Traish, M.D.
Angela Turalba, M.D.

Residents (AY 2009-2010)

Nicole Benitah, M.D.
Grace Chang, M.D., Ph.D.
Han-Ying Peggy Chang, M.D.
Jason Comander, M.D., Ph.D.
Anthony Daniels, M.D., M.Sc.
Meenakashi Gupta, M.D.
Rebecca Hunter, M.D.

Nancy Huynh, M.D.
Justin Kanoff, M.D.
Sahar Kohanim, M.D.
Kristina Kurbanyan, M.D.
Yao Liu, M.D.
Ann-Marie Lobo, M.D.
Zhonghui Katie Luo, M.D., Ph.D.
Lynn J. Poole Perry, M.D., Ph.D.
Rajesh Rao, M.D.
Saadia Rashid, M.D.
Jullia Rosdahl, M.D.
Andrew Schneier, M.D.

Ophthalmology Research

Howe Laboratory
Richard H. Masland, Ph.D., Director
Janey L. Wiggs, M.D., Ph.D., Associate Director

Angiogenesis Laboratory
Evangelos S. Gragoudas, M.D., Co-Director
Joan W. Miller, M.D., Co-Director

Berman-Gund Laboratory for the Study of Retinal Degenerations
Eliot L. Berson, M.D., Director

Laser Laboratory
Evangelos S. Gragoudas, M.D., Co-Director
Joan W. Miller, M.D., Co-Director

Retina Research Institute
Evangelos S. Gragoudas, M.D., Co-Director
Joan W. Miller, M.D. Co-Director

Research Faculty
Eliot L. Berson, M.D.
James Chodosh, M.D., M.P.H.
Joseph B. Ciolino, M.D.
Kathryn A. Colby, M.D., Ph.D.
Kip Connor, Ph.D.
Reza Dana, M.D., M.P.H., M.Sc.
Alexander R. Gaudio, M.D.
Michael Gilmore, Ph.D.
Evangelos S. Gragoudas, M.D.
Pedram Hamrah, M.D.
Tatjana C. Jakobs, M.D.
Ula V. Jurkunas, M.D.
Ivana K. Kim, M.D.
John I. Loewenstein,M.D.
Clint Makino, Ph.D.
Richard H. Masland, Ph.D.
Lotfi Merabet, O.D., Ph.D.
Joan W. Miller, M.D.
Shizuo Mukai, M.D.
Louis R. Pasquale, M.D.
Jayabarathy Rajaiya, Ph.D.
Douglas J. Rhee, M.D.
Joseph F. Rizzo, III, M.D.
Michael A. Sandberg, Ph.D.
Lucia Sobrin, M.D., M.P.H.
Demetrios Vavvas, M.D., Ph.D.
Janey L. Wiggs, M.D., Ph.D
Lucy H.Y. Young, M.D., Ph.D.

Research Appointments

Research Associates
Oleg Bulgakov, Ph.D., (through March 2010)
Jinghua Chen, M.D.
Mien V. Hoang, Ph.D.
Tomoki Isayama, Ph.D.
Dong-Jin Oh, Ph.D.
Basil Pawlyk, M.Sc.

Research Fellows
Lama Amulki, M.D.
Rodrigo Alvarez, M.D.
Irina S. Barequet, M.D.
Ling Chen, Ph.D.
Yihe Chen, Ph.D.
Cynthia Cordeiro, M.D., Ph.D.
Sepideh Faez, M.D.
Bao-Jian Fan, M.D.
Giulio Ferrari, M.D.
Andrea Giani, M.D.
Akira Hagiwara, M.D.
Seung-Youn Jea, M.D.
Ja-Heon Kang, M.D., Ph.D.
Min Hyung Kang, Ph.D.
Maki Kayama, M.D.
Xanthi Koufoumichali, M.D.
Joo-Eun Lee, M.D.
Zhang Li, M.D.
Akrivi Manola, M.D.
Dimosthenis Mantopoulos, M.D.
Sadaharu Miyazono, Ph.D.
Yuki Morizane, M.D.
Nadia Tajouri Morizur, M.D.
Yusuke Murakami, M.D.
Nambi Nallasamy, M.D.
Andre Okanobo, M.D.
Athanasios Papakostas, M.D.
Mi In Roh, M.D.
Sana Siddique, M.D.
Alexandra Silveira, Ph.D.
Ahmed Z. Soliman, M.D.
Daniel Sun, O.D., Ph.D.
Dawei Sun, M.D.
Xun Sun, Ph.D.
Aristomenis Thanos, M.D.
Sofia Theodoropoulou, M.D.
Georgios Trichonas, M.D.
Hiroki Ueno, M.D., Ph.D.
DanYi Wang, M.D.
Xiao-Hong Wen, Ph.D.
Fang Xie, M.D.
Souska Zandi, M.D. Ph.D.
Yan Zhang, Ph.D.
Xiaohong Zhou, M.D.

Department of Otolaryngology

Active Staff

Chief of Otolaryngology
Joseph B. Nadol, Jr., M.D.

Surgeons
Ramsey Alsarraf, M.D.
Barry J. Benjamin, M.D.
Yale J. Berry, M.D.
David M. Bowling, M.D.
Jeffrey S. Brown, M.D.
Jean M. Bruch, M.D.
Nicolas Y. BuSaba, M.D.
Mack L. Cheney, M.D.
Michael J. Cunningham, M.D.
Daniel G. Deschler, M.D.
Pamela F. Diamond, M.D.
A. Greer Edwards, M.D.
Ramon A. Franco, M.D.
Peter N. Friedensohn, M.D.
Richard E. Gliklich, M.D.
Richard Hillel, M.D.
George Kazda, M.D.
Robert M. Kiskaddon, M.D.
Paul M. Konowitz, M.D.
John B. Lazor, M.D.
Lawrence J. Mambrino, M.D.
Leila A. Mankarious, M.D.
Michael J. McKenna, M.D.
Saumil N. Merchant, M.D.
Ralph B. Metson, M.D.
Joseph B. Nadol, Jr., M.D.
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H. Gregory Ota, M.D.
Dennis S. Poe, M.D.
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James A. Rocco, M.D., Ph.D.
Mark F. Rounds, M.D.
Michael A. Williams, M.D.
Steven M. Zeitels, M.D.

Associate Surgeons
Samir M. Bhatt, M.D.
Victor Calcaterra, M.D.
K. Holly Gallivan, M.D.
Sapideh Gilani, M.D.
Allan J. Goldstein, M.D.
Stacey T. Gray, M.D.
Theresa A. Hadlock, M.D.
Maynard C. Hansen, M.D.
Christopher J. Hartnick, M.D.
Eric H. Holbrook, M.D.
Ralph A. Iannuzzi, M.D.
David A. Kieff, M.D.
Derrick T. Lin, M.D.
Michael B. Rho, M.D.
Assistant Surgeons
Jaimie DeRosa, M.D.
Ronald K. de Venecia, M.D., Ph.D.
Kevin S. Emerick, M.D.
Alex Grilli, M.D.
Donald G. Keamy, Jr., M.D.
Daniel J. Lee, M.D.
Stephen A. Smith, M.D.
Jennifer L. Smullen, M.D.
Eric H. Stein, M.D.
Assistants in Otolaryngology
lee Ching Anderson, M.D.
Benjamin S. Bleier, M.D.
David J. Lesnik, M.D.
Mandana R. Namiranian, M.D.
Brian J. Park, M.D.
Phillip C. Song, M.D.
Konstantina M. Stankovic, M.D., Ph.D.
Pathologist
William Faquin, M.D., Ph.D.
Assistant Pathologist
Peter M. Sadow
Artur Zembowicz, M.D.
Consultant in Dermatologic Surgery
Jessica L. Fewkes, M.D.
Oon T. Tan, M.D.
Consultant in Neurology
Robert A. Levine, M.D.
Stephen W. Parker, M.D.
Consultant in Otoneurology
Richard F. Lewis, M.D.
Adrian J. Priesol, M.D.

Associate Staff

Associate Surgeons
Robert A. Frankenthaler, M.D.
Gerald B. Healy, M.D.
Arthur M. Lauretano, M.D.
Trevor J. McGill, M.D.
Keith G. Saxon, M.D.
Jo Shapiro, M.D.
J. Nicholas Vandemoer, M.D.
David M. Vernick, M.D.
Mark S. Volk, M.D.
Assistant Surgeons
Donald J. Annino, Jr., M.D.
Neil Bhattacharyya, M.D.
David S. Caradonna, M.D.
Jeannie H. Chung, M.D.
Daryl G. Colden, M.D.
Thomas H. Costello, M.D.
Pamela D. Dana, M.D.
Raffi der Sarkissian, M.D.
Laura A. Goguen, M.D.
John G. Meara, M.D., D.M.D.
Dukhee Rhee, M.D.
Jeffrey C. Roach, M.D.
Noah S. Siegel, M.D.
Jeffrey H. Spiegel, M.D.
Ellen A. Weinberg, M.D.
Assistants in Otolaryngology
James C. Alex, M.D.
Christopher F. Baranano, M.D.
David S. Chrzanowski, M.D.
Frank P. Fechner, M.D.
William P. Innis, M.D.
B. Kyle Keojampa, M.D.
Samuel J. Lin, M.D.
Richard E. Mugge, M.D.
Vijay K. Nayak, M.D.
William A. Numa, M.D.
Peter E. Seymour, M.D.
Russell S. Shu, M.D.
Rebecca S. Stone, M.D.
Henri C. Tannas, M.D.
Hien T. Tierney, M.D.
Consultant in Allergy and Immunology
Johnson Wong, M.D.
Consultant in Hyperbaric Medicine
David A. Peak, M.D.
Consultant in Maxillofacial Prosthetics
Matthew J. Jackson, D.M.D.
Consultant in Oral/Maxillofacial Surgery
Leonard B. Kaban, M.D., D.M.D.
Consultants in Pediatric Gastroenterology
Stephen C. Hardy, M.D.
Esther J. Israel, M.D.
Consultant in Pediatric Pulmonary Medicine
M. Shannon Fracchia, M.D.
Kenan E. Haver, M.D.
Samuel M. Moskowitz, M.D.
Consultants in Pediatric Surgery
Brian Cummings, M.D.
Allan M. Goldstein, M.D.
Daniel P. Ryan, M.D.
Consultants in Plastic Surgery
William G. Austen, M.D.
Daniel A. DelVecchio, M.D.
G. Gregory Gallico, M.D.
Peter E. Gee, M.D.
Leonard B. Miller, M.D.
Sheldon Sevinor, M.D.
Sumner A. Slavin, M.D.
Michael J. Yaremchuk, M.D.
Consultant in Thyroid Surgery
Randall D. Gaz, M.D.

Courtesy Staff

Surgeon
Jose D. Angeles, M.D.
Associate Surgeons
Peter S. Ambrus, M.D.
Bruce R. Gordon, M.D.
Ely A. Kirschner, M.D.
Assistant Surgeons
Fred G. Arrigg, M.D.
Stuart H. Bentkover, M.D.
Bjorn Bie, M.D.
Thomas A. Chasse, M.D.
Terry J. Garfinkle, M.D.
James P. Hughes, M.D.
Joshua L. Kessler, M.D.
Charles J. Leidner, M.D.
Joseph H. Oyer, M.D.
Pratik Pradhan, M.D.
Kathryn A. Ryan, M.D.
Jonathon S. Sillman, M.D.
H. Dennis Snyder, M.D.
Assistants in Otolaryngology
James L. Demetroulakos, M.D.
Harsha V. Gopal, M.D.
William S. Postal, M.D.
Robert A. Stern, M.D.
Ceceila V. Tran, M.D.
Consultants in Oral/Maxillofacial Surgery
Meredith August, M.D., D.M.D.
Carol Lorente, D.M.D.
Consultants in Pediatric Surgery
David F. Lawlor, M.D.
Consultants in Plastic Surgery
Richard A. Bartlett, M.D.
Jonathan Winograd, M.D.

Honorary Staff

Surgeons
Richard L. Fabian, M.D.
Richard R. Gacek, M.D.
Edward J. Glinski, M.D.

C. Edward Jackson, M.D.
Roy A. Johnson, M.D.
Thomas R. Klein, M.D.
Robert E. Klotz, M.D.
John M. Kurkjian, M.D.
Thomas A. Mulvaney, M.D.

Associate Surgeon

William G. Lavelle, M.D.

Emeritus Staff

Surgeons

Howard M. Ecker, M.D.
Robert H. Freedman, M.D.
Alfred L. Hurst, M.D.
Parviz Janfaza, M.D.
Robert H. Lofgren, M.D.
Joseph A. Moretti, M.D.
David L. Pierce, M.D.
Salah D. Salman, M.D.

Associate Surgeon

Usama S. Hamdan, M.D.

Research Fellows

Katharine Belzner, Ph.D.
Suprapol Chantapant, M.D.
Yoojin Chung, Ph.D.
Mitchell Day, Ph.D.
Csilla Haburcakova, Ph.D.
Mohamad Hamade, M.D.
Courtney Hill, M.D.
Mingqian Huang, Ph.D.
Jane Bjerg Jensen, M.D.
Dipti Kamani, M.D.
Albena Kantardzhieva, Ph.D.
Shyan-Yuan Kao, Ph.D.
Faisal Karmali, Ph.D.
Judith Kempfle, M.D.
Shi-Chan Kim, M.D., Ph.D.
Kumud Lall, M.D.
Maria Lazebnik, Ph.D.
Sang Goo Lee, Ph.D.
Jeffery Lichtenhan, Ph.D.
Na Lu, M.D.
Juan Malo, M.D.
Efrain Martinez, M.D.
Michaela Meyer, Ph.D.
Rupprecht Milojcic, M.D.
Kunio Mizutari, M.D, Ph.D.
Sung-Il Nam, M.D., Ph.D.
Keyvan Nicoucar, M.D.
Nut Niyomudomwatana, M.D.
Erin Pararas, Ph.D.
Mark Parker, Ph.D.
Marcello Peppi, Ph.D.
Marco Petrillo, Ph.D.
Eimear Phelan, M.D.
Susanne Prahl, Ph.D.
S. R. Prakash, Ph.D.
Mohammad Seyyedi, M.D.
Yong Tang, Ph.D.
Mingjie Tong, Ph.D.
Hajime Usubuchi, M.D.
Rohit Verma, M.D.
Bo Wen, Ph.D.
Yasheng Yuan, M.D., Ph.D.

Clinical Fellows

Vasu Divi, M.D.
Douglas K. Henstrom, M.D.
Stephen C. Maturo, M.D.
Andrew A. McCall, M.D.
Zachary M. Soler, M.D.
Chih-Kwang Sung, M.D.
Marica Zizic-Mitrecic, M.D.

Residents

Margo M. Benoit, M.D.
Hien T. Tierney, M.D.
Alicia M. Quesnel, M.D.
Aaron M. Wieland, M.D.
Kiran Kakarala, M.D.
Amanda L. Silver, M.D.
Kalpesh T. Vakharia, M.D.
Daniel S. Fink, M.D.
David H. Jung, M.D., Ph.D.
Linda N. Lee, M.D.
Harrison W. Lin, M.D.
Aaron Tward, M.D., Ph.D.
Sunshine M. Dwojak, M.D.
Sang W. Kim, M.D.
Joshua C. Meier, M.D.
Daniel S. Roberts, M.D., Ph.D.

Research Residents

Megan E. McLellan, M.D.
Josef Shargorodsky, M.D.

Services

Audiological Services

Sharon Kujawa, Ph.D., Director

Auditory Evoked Response

Robert Levine, M.D., Medical Director

ENT Emergency Service

George Kazda, M.D., Director

Facial Plastics and Reconstructive Surgery Service

Mack L. Cheney, M.D., Director

Facial Nerve Center

Tessa A. Hadlock, M.D., Director

General Otolaryngology

Gregory W. Randolph, M.D., Director

Head and Neck Surgical Oncology Service

Daniel G. Deschler, M.D., Director

Norman Knight Hyperbaric Oxygen Unit

Daniel G. Deschler, M.D., Director

Intermediate Care Unit

Daniel G. Deschler, M.D., Director

Jenks Vestibular Diagnostic Laboratory

Richard E. Lewis, M.D., Medical Director

Laryngology Service

Ramon A. Franco, Jr., M.D., Director

MGH/MEEI Cranial Base Center

Derrick T. Lin, M.D., Co-Medical Director

Medical Student Education

Steven D. Rauch, M.D., Coordinator
Daniel G. Deschler, M.D., Associate Coordinator

Otolaryngologic Pathology Service

William Faquin, M.D., Ph.D., Director

Otology Service

Joseph B. Nadol, Jr., M.D., Director

Pediatric Otolaryngology Service

Michael J. Cunningham, M.D., Director

Thyroid and Parathyroid Surgery Division

Gregory W. Randolph, M.D., Director

Voice and Speech Laboratory

Glenn Bunting, M.S., Clinical Director
Ramon A. Franco, Jr., M.D., Medical Director

Research Staff

Amelia Peabody Otoimmunochemistry Laboratory

Joe C. Adams, Ph.D., Director

Audiology

Chris Halpin, Ph.D.
Barbara S. Herrmann, Ph.D.

Clinical Outcomes Research Unit

Richard E. Gliklich, M.D., Director

Cochlear Implant Research Laboratory

Donald K. Eddington, Ph.D., Director

Eaton-Peabody Laboratory of Auditory Physiology

M. Charles Liberman, Ph.D., Director
Louis Braida, Ph.D.
M. Christian Brown, Ph.D.
Peter A. Cariani, Ph.D.
Tao Jeffrey Cheng, Ph.D.
Steven H. Colburn, Ph.D.
Bertrand Delgutte, Ph.D.
Dennis M. Freeman, Ph.D.
Barbara C. Fullerton, Ph.D.
Cosme Furlong, Ph.D.
John J. Guinan, Ph.D.
Kenneth E. Hancock, Ph.D.
Stephane Maison, Ph.D.
Jennifer R. Melcher, Ph.D.
Mark Parker, Ph.D.
William T. Peake, Ph.D.
Christopher Shera, Ph.D.
Fuxin Shi, Ph.D.

Mark Tramo, M.D., Ph.D.
Susan Voss, Ph.D.
Thomas F. Weiss, Ph.D.
F. Ishmael Stefanov-Wagner,
Research Support Engineer
Inner Ear Biophysics Unit
Ruth Anne Eatock, Ph.D.
Neurochemistry Unit
William F. Sewell, Ph.D.
Neural Plasticity Research Unit
Daniel B. Polley, Ph.D.
Tillotson Unit
Albert Edge, Ph.D.
Zheng-Yi Chen, Ph.D.
Wallace Middle Ear Research Unit
Saumil N. Merchant, M.D.
John J. Rosowski, Ph.D.
Electron Microscopy Laboratory
Charles M. Liberman, Ph.D., Director
Jenks Vestibular Laboratory
Conrad Wall III, Ph.D., Director
Jenks Vestibular Physiology Laboratory
Daniel M. Merfeld, Ph.D., Director
Molecular Oncology Research Laboratory
James W. Rocco, M.D., Ph.D., Director
Otopathology Laboratory
Saumil N. Merchant, M.D., Director
Clarinda C. Northrop
National Temporal Bone, Hearing and Balance Pathology Resource Registry
Saumil Merchant, M.D., Co-Director
Joseph B. Nadol, Jr., M.D., Co-Director

Department of Radiology

Active Staff

Chief of Radiology
Hugh D. Curtin, M.D.
Assistants in Radiology
Jason S. Appel, M.D.
Paul A. Caruso, M.D.
Mary E. Cunnane, M.D.
Amy Juliano, M.D.
Michael H. Lev, M.D.
Gul Moonis, M.D.
James D. Rabinov, M.D.
Sandra P. Rincon, M.D.
Laura Vitale Romo, M.D.
Physicist
Leena Hamberg, Ph. D.
Associate Staff
Associate Radiologist
R. Gilberto Gonzalez, M.D.
Emeritus Staff
Alfred L. Weber, M.D.

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Vice President for Clinical and Patient Care Services & Chief Nursing Officer
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Vice President Otolaryngology
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Vice President Ophthalmology
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Vice President Finance
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Vice President Communications
Jennifer Street
Chief Development Officer
Melissa Paul
Vice President Research & Academic Affairs
Michael Collins
Vice President Facilities & Planning
Robert Biggio
Chief Information Officer
Alec Cheloff
General Counsel
Susan Williams

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(As of 12/6/10)

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Lily H. Bentas
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Lyle Howland
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Joseph B. Nadol, Jr., M.D.*
Annette Nova
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Herbert W. Pollack (through 12/6/10)
Gregory W. Randolph, M.D. (Invitee)
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(Invitee through 12/6/10)
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Frederick G.P. Thorne

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2009 Stuart B. Abelson
1999 Peter C. Aldrich
2001 Richard H. Aldrich
1996 William F. Allen, Jr.
1999 Nancy Jo Altschuler
1999 Samuel Altschuler
2009 Robert Atchinson
1991 W. Gerald Austen, M.D.
(through 8/11/10)
1993 Lucille Batal
2002 E. Lorraine Baugh
1974 Bruce A. Beal
1995 Vivian C. Beard
1986 George Berkowitz
1986 Alexander A. Bernhard+
2009 John R. Bertucci
1988 Richard W. Blackburn
2000 Georgette Boucai
2000 Robert N. Boucai
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1985 Karen K. Chandor
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1998 Cheryl L. Clarkson
2005 David E. Clem

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2003 Ann Marie Cotton
2006 Charles E. Curtis
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2005 John D. DesPrez III
1999 JoAnne Dickinson
1999 Gerard F. Doherty
1993 Claes H. Dohlman, M.D.
1995 Paul J. Donahue
2005 Fay Donohue
1985 John Dowling, Ph.D.
1997 Philip DuBois, Ph.D.
2010 Candace E. Dyal
1972 Mrs. William P. Ellison
2001 Michael A. Ervolini
2002 Donald J. Evans
2003 Robert P. Fitzgerald
2006 Samuel C. Fleming
1977 John O'Sullivan Francis
2000 Richard I. Freedman
2009 Harvey W. Freishtat
1983 Ephraim Friedman, M.D.
1996 James F. Gerrity, III
2004 Michael A. Greeley
2001 Karen F. Green
2005 Catherine E. Grein
2009 Grant Gund
2001 William E. Gundy
1995 Joseph W. Haley
2002 Carol L. Horvitz
2000 Robert C. Jordan, Jr.
1994 Yu Sing Jung
1981 John C. Kane, Jr.
1986 Diane E. Kaneb +
2002 Christopher P. Kauders
2000 John E. Kavanagh, III
1995 Mary E. Kearney
2010 Nathanael G. Kessler
1982 Jonathan M. Keyes
1996 Nelson Y.S. Kiang, Ph.D.
1988 Charles F. Kiefer, III
1999 Richard L. Kobus
2000 Jonathan W. Kutchins
1998 Renée M. Landers
1989 William G. Lavelle, M.D.
2002 Shaun R. Levesque
1999 Jacqueline W. Liebergott, Ph.D.
1997 Harvey F. Lodish, Ph.D.
2003 Matthew Lorber
1965 Mrs. John Lowell (Hon.)
1986 Peter S. Lynch
1995 Wayne D. Mackie
1984 Richard A. MacKinnon (Hon.)
1999 John H. Marenghi
2006 David P. Marotta
2002 Mary T. Marshall
1995 Patricia McGovern
2004 Marlyn McGrath
1994 Loretta McLaughlin
1971 Mrs. Robert C. Meisel
2005 Joseph A. Milano
1987 Winthrop G. Minot
1999 Suzanne Murray
1994 Ruth Z. Nadol
1989 J. Louis Newell, Jr.
1998 Christopher E. Nolin
2005 Karen L. O'Connor, Ph.D.
2000 Carol Sawyer Parks
1996 Donald M. Perrin
2009 Marguerite A. Piret
1997 Herbert W. Pollack
2002 Denise Porter
2002 Daniel J. Quirk
1984 George J. Rabstejnek +
2000 Phyllis Redstone
2010 Tuck Rickards
1988 William E. Roman
1988 Kenneth R. Rossano
1979 Mrs. Ernest J. Sargeant (decd.)
2000 David N. Saul
2009 Robert G. Scott
1995 David W. Scudder
1997 L. Dennis Shapiro
1986 Malcolm L. Sherman
2003 Roberta W. Siegel
1985 Mrs. Bruce Silver
2000 Gordon H. Silver
2000 William B. Smith
2004 Christian B. Snook
1967 William F. Spang (Hon.)
1996 Rand K. Spero
1977 Sandra Carnegie Steele
2005 Ann M. Stockbridge
1991 James F. Sullivan, Sr.
1997 Robert D. Sweeney
1973 Frederick G.P. Thorne
2000 Polly Townsend
2002 Mr. Robert E. Travaglini
1999 Wat Tyler
2009 Jennifer Uhrig
2009 Jonathan M. Uhrig
1997 Vincent Vitto
1967 Monte J. Wallace
2009 Grant M. Wilson
2003 Terence Wong
2002 Barry B. Yellen
1996 Janet Zwanziger
1996 Ron Zwanziger

+ Former Chair
** Ex officio*
(Hon.) Honorary Lifetime Trustee
(decd.) deceased

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- Highest Quality Care, page 07
- Research and Academic Leadership, page 10
- Financial Health, page 15
- Community Outreach, page 20

FY '10: The Chiefs' Reports: Visit MassEyeAndEar.org/about-us

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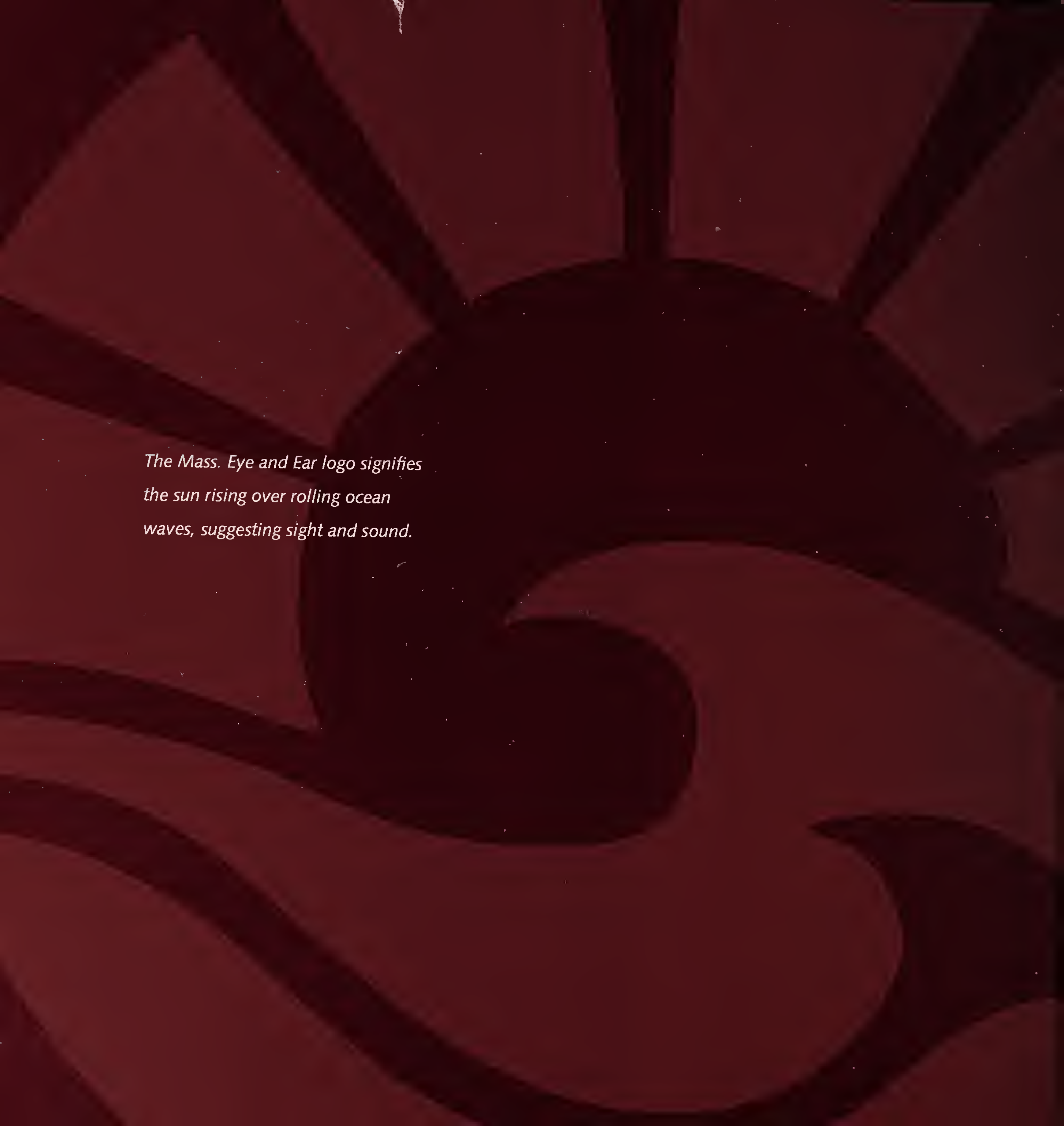
Sunil Eappen, M.D., Chief of Anesthesia
Hugh D. Curtin, M.D., Chief of Radiology

Massachusetts Eye and Ear Infirmary

QUALITY AND OUTCOMES

Department of Ophthalmology

2010



The Mass. Eye and Ear logo signifies the sun rising over rolling ocean waves, suggesting sight and sound.

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Chair's Letter

Physicians today want to practice evidence-based medicine so that we can diagnose and treat patients using the best available data. To accomplish this, we usually refer to randomized clinical trials in which carefully matched groups of patients are studied comparing an intervention, a drug or a surgery. Unfortunately, this level of data exists for very few medical decisions and, even when it does, it may not be helpful when considering options for an individual patient who doesn't have the exact same characteristics as those who were enrolled in the clinical trials.

Another way to examine the effectiveness of our clinical practice involves studying outcomes. How effective are we, the Mass. Eye and Ear and Harvard Medical School's (HMS) Department of Ophthalmology, when we treat patients with wet or neovascular age-related macular degeneration? How well do our patients see after cataract surgery? How often do patients develop post-operative infections? In other words, how well do our doctors, nurses and health care professionals manage their patients?

At Mass. Eye and Ear and HMS's Department of Ophthalmology, we have more than a century of experience in leading the world in innovative approaches to eye disease. We founded subspecialty training in cornea, retina and glaucoma, and have developed new treatments for diseases ranging from retinal detachment to corneal scarring to macular degeneration. Now we aim to lead the medical community in the development of outcome measures in ophthalmic care. How are we doing today and how can we improve patient outcomes in the future?

This Quality and Outcomes Report is a first, but important step. I would like to thank the Department of Ophthalmology's Chief Quality Officer, Teresa C. Chen, MD, for her leadership in this project, as well as her team of faculty, administrators and trainees who helped initiate and contribute to this important endeavor.

For more information about Mass. Eye and Ear's Quality Program or the Department of Ophthalmology, please visit our website at **www.MassEyeAndEar.org**.

Joan W. Miller, MD
Henry Willard Williams Professor of Ophthalmology
Chief and Chair, Department of Ophthalmology
Massachusetts Eye and Ear Infirmary
Massachusetts General Hospital
Harvard Medical School

Mass. Eye and Ear's Ophthalmology Quality Program and Outcomes Book

The goal of Mass. Eye and Ear's Quality Program is to provide the best patient-centered care delivered by the highest quality staff. An effective and sustainable quality improvement plan must be centered on best outcomes, service, patient safety, effective treatments, timely care, efficiency, equitable healthcare, and cost lowering. Excellence in future patient care will be achieved by education of future ophthalmic leaders and by research to develop better treatments.

Best quality is demonstrated by best outcomes. Our primary aim in collecting outcomes data is to drive quality improvement in order to deliver the best patient care possible utilizing state-of-the-art medicine and technology. In this report, we aimed for transparency — describing data from all of our hospital's subspecialty services, as well as reporting the results of all of our major clinical and surgical procedures.

Most of the data provided in this report reflects patient outcomes during a one-year period from 2008 to 2009, with specific months stated in the text. Although most of this year's data was collected retrospectively, our hope is that future outcomes reports will describe data that are prospectively and electronically collected. In addition to participating in the Physician Quality Reporting Initiative (PQRI), our hospital has both electronic medical records and electronic prescription capabilities. We anticipate that future technology advances will facilitate measurements of patient care outcomes from year to year.

It is important to note that the information contained in this outcomes book focuses primarily on the work of the full-time staff at Mass. Eye and Ear's main Boston campus, unless otherwise stated.

A PDF version of this report is available on our website at **www.MassEyeAndEar.org**.

I would like to acknowledge Mass. Eye and Ear's President and CEO, John Fernandez, who had the vision to establish highest quality care as a top priority so that we can continue to provide the exceptional ophthalmic care that has become a hallmark of our institution. Finally, I would like to acknowledge Joan W. Miller, MD, Chair of the Department of Ophthalmology at HMS, who first introduced the idea of producing an outcomes book at Mass. Eye and Ear and who helped lead our hospital in this important initiative.

Teresa C. Chen, MD
Associate Professor of Ophthalmology, Harvard Medical School
Chief Quality Officer, Department of Ophthalmology, Massachusetts Eye and Ear Infirmary

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Massachusetts
Eye and Ear
Infirmary

Mass. Eye and Ear Overview

Our mission and core values are patient-centered and focus on delivering the highest quality of patient care through education, innovation and service excellence.

Founded in 1824, the Massachusetts Eye and Ear Infirmary is a pre-eminent specialty, teaching and research hospital dedicated to caring for disorders of the eye, ear, nose, throat, head and neck. Our dedicated staff provides primary and subspecialty care and serves as a referral center for inpatient and outpatient medical and surgical care. Mass. Eye and Ear is the leading authority in its specialties throughout the northeast and is a resource globally for advances in patient care, research and education.

As the primary academic center for Harvard Medical School's Departments of Ophthalmology and Otolaryngology, we are deeply committed to providing a superb education to the next generation of health care vision leaders. Our world-renowned experts are continuously innovating in the fields of translational and bench research, turning insights into cures that benefit scores of people. We continue to forge new partnerships and alliances — locally, nationally and beyond our borders — to increase our reach and make our expertise, services and resources available to all who need them.

Pivotal to our clinical quality efforts is the use of the Longitudinal Medical Record (LMR), an integrated and secure system of communication and medical record sharing among the majority of Harvard Medical School's network of 17 hospitals and affiliates. This network facilitates quick and easy communication among referring physicians and Mass. Eye and Ear's consulting ophthalmologists. It also enables our physicians to instantly tap our in-house specialists, affording seamless and rapid access to some of the best ophthalmic resources available.

Mass. Eye and Ear Department of Ophthalmology

- Primary teaching hospital of the Harvard Medical School Department of Ophthalmology

Clinical Affiliations

- Massachusetts General Hospital Department of Ophthalmology
- Brigham and Women's Hospital
  - trauma coverage, inpatient, outpatient clinical services
- Children's Hospital Ophthalmology Foundation (CHOF), Boston
  - Mass. Eye and Ear ophthalmologists provide specialty pediatric eye care at Children's Hospital in collaboration with CHOF
  - CHOF ophthalmologists staff comprehensive pediatric ophthalmology and strabismus clinic at Mass. Eye and Ear

Academic Affiliations

- Massachusetts General Hospital
- Brigham and Women's Hospital
- Beth Israel Deaconess Hospital
- Joslin Diabetes Clinic
- Children's Hospital Boston
- Boston Veterans' Administration
- Togus, Maine Veterans' Administration
- Schepens Eye Research Institute
- Aravind Hospital, India

Mass. Eye and Ear Overview

(continued)

Resources at Mass. Eye and Ear

- Full spectrum of primary and subspecialty ophthalmic care
- Investment in advanced technology for corneal and retinal imaging, laser and conventional surgery, longitudinal medical records and e-scribing.
- Mass. Eye and Ear Medical Unit, staffed by MGH physicians
- Mass. Eye and Ear Radiology Department
- The David Glendenning Cogan Laboratory of Ophthalmic Pathology, in conjunction with the MGH Surgical Pathology Service.
- The Howe Library houses one of the most extensive ophthalmology research collections in the world.
- Twenty-four hour/seven-days-a-week pharmacy, specializes in ophthalmology medications like oral glycerin, fortified topical antibiotics, pediatric acetazolamide suspension, etc.
- Anesthesia and nursing staff with ophthalmology specialization
- Dedicated social work department

Mass. Eye and Ear Chief of Ophthalmology Dr. Joan W. Miller examines a patient with macular degeneration.

Key Statistics: Mass. Eye and Ear Ophthalmology

October 2008- September 2009

Outpatient Ophthalmology Visits

Mass. Eye and Ear (Boston)

SUBSPECIALTY	PATIENT VISITS
Comprehensive Ophthalmology	22,736
Emergency Department	12,239
Trauma	865
Cornea	9,751
Refractive Surgery	2,316
Contact Lens Service	3,930
Ophthalmic Plastic, Reconstructive Surgery	5,280
Glaucoma	12,887
Pediatrics and Strabismus	3,344
Immunology and Uveitis	3,910
Electroretinography	886
Neuro-Ophthalmology	4,356
Retina	15,929
Vision Rehabilitation Service	1,423
Total Outpatient Ophthalmology Visits (Boston)	99,852

Mass. Eye and Ear (Other Locations)

LOCATION	PATIENT VISITS
Stoneham	3,029
East Bridgewater *(opened May 2009)*	313
Longwood *(opened July 2009)*	77
Total Outpatient Ophthalmology Visits (Other Locations)	3,419

Total Mass. Eye and Ear Outpatient Visits (Boston and Other Locations)	103,271

Emergency Room Visits

October 2008- September 2009

Total number of Ophthalmology patients	12,239

Surgical Procedures

October 2008- September 2009

Total surgeries	8,418
Total laser procedures	2,745
Laser Surgery	1,609
PDT	159
Refractive	977
Total intravitreal injections	2,175

Major Ophthalmology Imaging/Radiology

July 2008-June 2009

Scans performed by Radiology Service	1,153
CT scans	728
MRI	408
X-rays	17

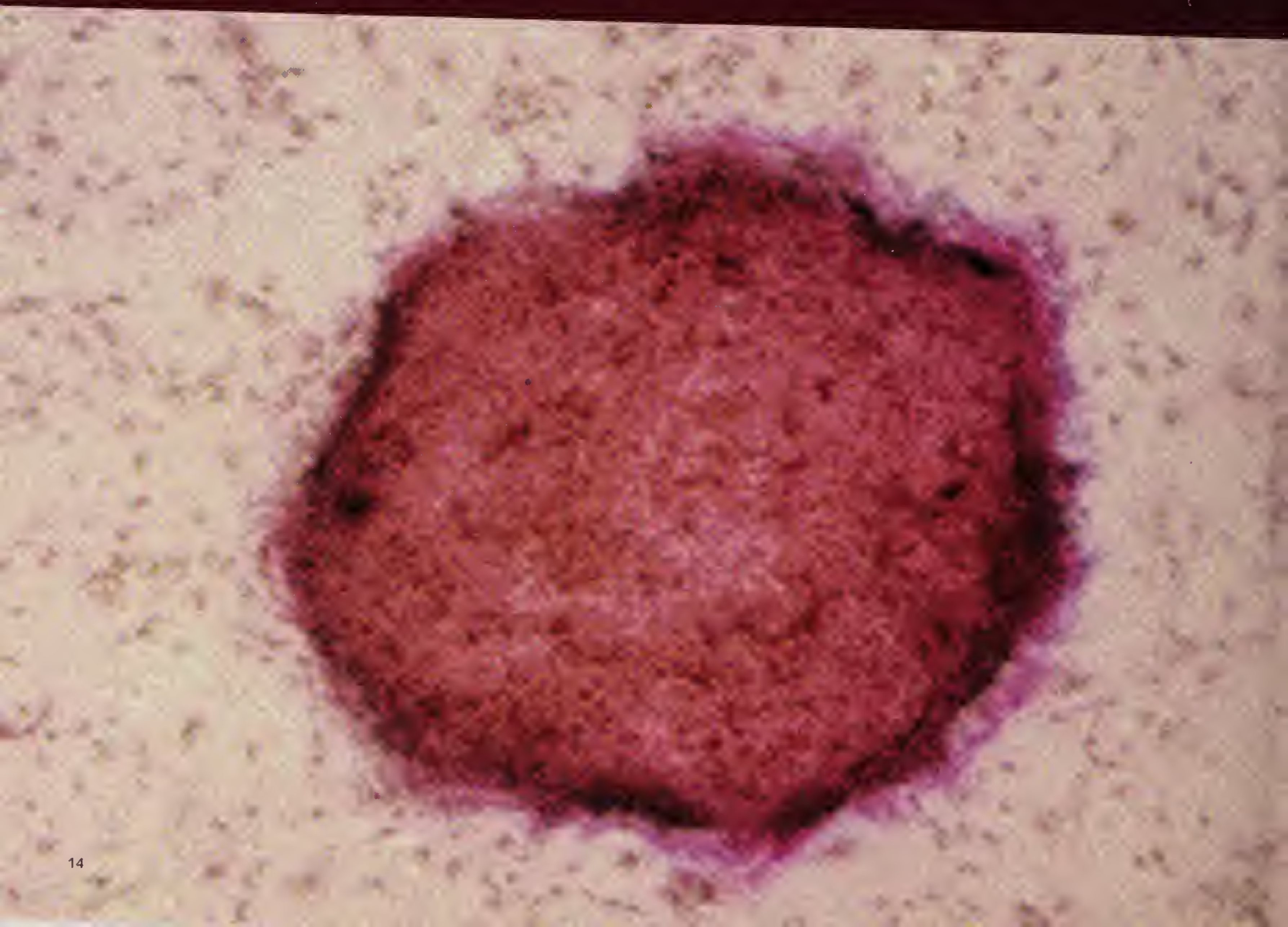
Minor Ophthalmology Imaging/Testing

October 2008-September 2009

Angiograms	1,645
Imaging tests (e.g., optical coherence tomography imaging)	8,449
Ultrasound testing (e.g., Bscan)	7,456
Electroretinograms (ERG and Retina Service)	898
Related testing	3,569
Visual field testing (# of patients)	9,513

This is a photograph of a colony of cells that comes from a single stem cell.

Picture courtesy Ula Jurkunas, MD



Ophthalmology Resource Centers: Laser Centers

Director: Lucia Sobrin, MD, MPH

The Morse Laser Center (twelfth floor)

For more than 25 years, Mass. Eye and Ear's highly skilled physicians have routinely performed laser procedures using the most advanced techniques and technology available today.

The Morse Laser Center (twelfth floor) houses our state-of-the-art laser equipment and includes:

Refractive lasers:

- Star S4 Excimer Laser (VISX/AMO)
- Allegretto Eye-Q Excimer Laser (Wavelight)
- FS 30 Diode Laser (Intralase)

Glaucoma lasers:

- Selecta 7000 YAG laser (Lumenis) for selective laser trabeculoplasty
- Diode Oculight (Iridex) for transscleral cyclophotocoagulation

Retinal lasers:

- Green (532 nm) YAG Laser (Pascal)
- 689-NM Red Opal Photo Activator (Lumenis)
- Novis Omni Argon (blue/green 670 nm, yellow 577 nm) laser (Lumenis)

Anterior segment laser:

- Aura Nd:YAG laser (Lumenis)

First Floor Laser Suite

Most of our anterior segment services are on the first floor. To better accommodate our ophthalmology patients and anterior segment physicians, we recently opened up a new laser suite on the first floor which houses two lasers:

- Aura PT Nd:YAG Laser System (Lumenis)
- Oculight Argon 532 nm Green Laser System (Iridex)

Ophthalmology Resource Centers: Ophthalmic Pathology Service

Director: Frederick A. Jakobiec, MD, DSc

The David Glendenning Cogan Laboratory of Ophthalmic Pathology at the Mass. Eye and Ear pools resources with the Massachusetts General Hospital's Surgical Pathology division to enhance diagnostic services, resident and fellow teaching, and clinico-pathologic research projects. The laboratory has a rich leadership tradition that includes such luminaries as Frederick Verhoeff, David Cogan, Taylor Smith and Daniel Albert. The current eye pathology staff has published over 600 articles and book chapters covering a wide gamut of subjects that contribute to a formidable collective diagnostic expertise and clinical experience. The full spectrum of diagnostic methods and subspecialty staff (skin, soft tissue and bone, lymphoma, neuropathology) in Surgical Pathology at the Massachusetts General Hospital are available to facilitate the diagnostic and research work of the Ophthalmic Pathology Laboratory.

The Cogan Laboratory welcomes outside glass slides for consultations and tissue in formalin for processing and diagnosis.

Select Resources/Services

- Multi-headed light microscope for simultaneous viewing of slides by up to 10 students, faculty and practitioners
- Histochemical staining for calcium, iron, copper, fat, glycogen, bacterial and fungal organisms, parasites, mucosubstances, melanin, amyloid, and neuroendocrine granules (special stains

include, among others, Masson trichrome, von Kossa, rhodamine, Prussian blue, alcian blue, mucicarmine, periodic acid Schiff, Brown-Hopps, Warthin-Starry, Ziehl-Neelsen, Fite, Grocott methenamine silver, Grimelius, Fontana-Masson, Verhoeff-van Gieson, Congo red, oil-red O)

- Immunoperoxidase staining for viruses (herpes family) and for epithelial, metastatic, lymphomatous, melanomatous, and sarcomatous tumor diagnosis (among other probes, monoclonal and polyclonal antibodies are employed for identifying cytokeratins, Ber-EP4, GCDFP-15, carcino-embryonic antigen, epithelial membrane antigen, HMB-45, MART-1, S-100, chromogranin, synaptophysin, GFAP, TTF1, MDM2, neurofilament, myosin, myogenin, myoglobin, desmin, smooth muscle actin, Ki-67, D2-40, CD34, Glut-1, CD3/5, CD10, CD20, bcl2, cyclinD, kappa and lambda light chains, CD68, lysozyme)
- Transmission electron microscopy

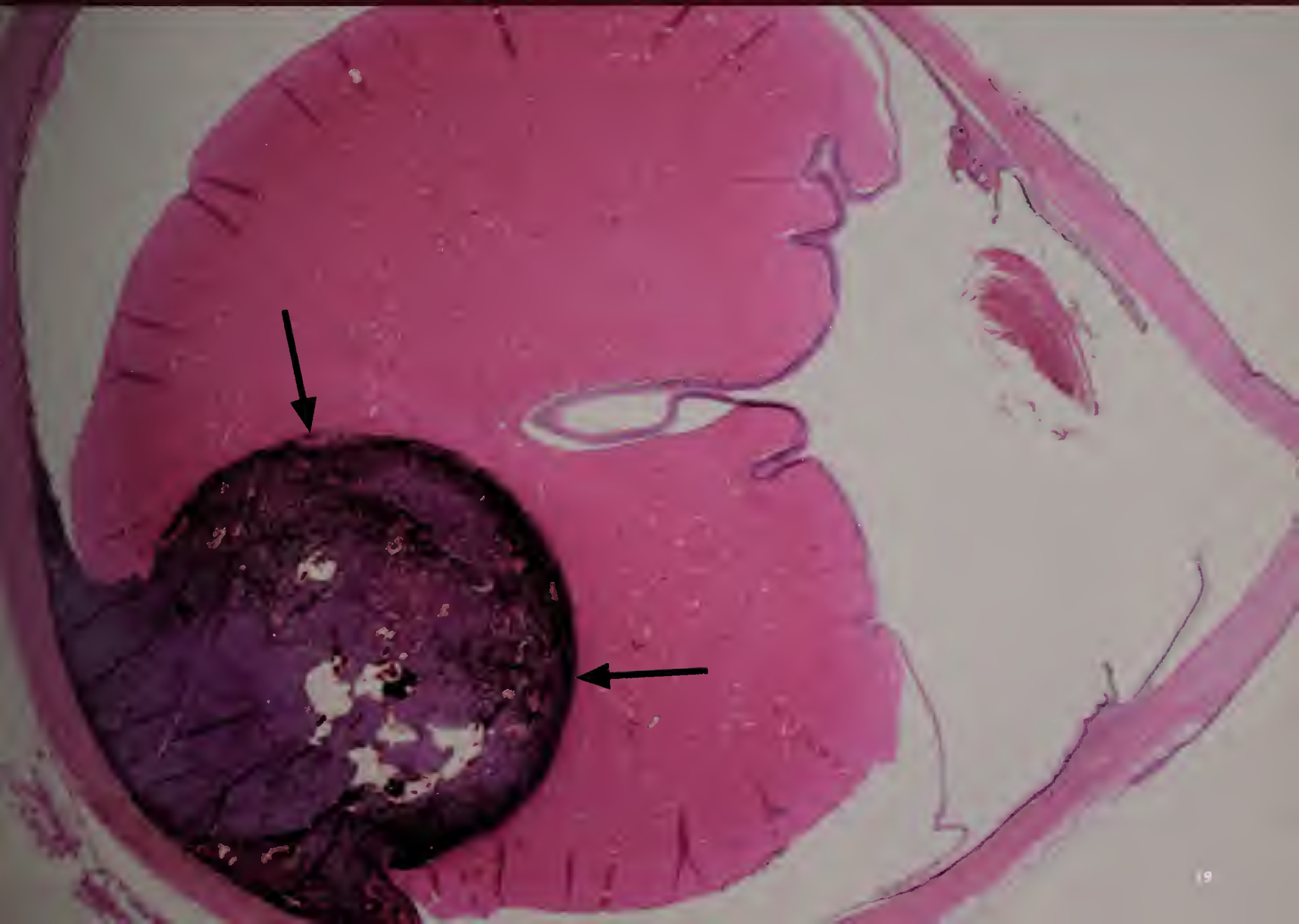
Ophthalmology Resource Centers: Ophthalmic Pathology Service

October 2008 - September 2009

SPECIMEN	NUMBER	PERCENTAGE
Eyelids	1060	30.2%
Conjunctiva	335	9.4 %
Corneas	244	6.8 %
Glaucoma	66	1.8 %
Orbital tissues, including bone and lacrimal sac	240	6.7 %
Vitreous and other cytologic specimens	137	3.8 %
Enucleated eyeballs and eviscerations	145	4.0 %
Exenterated orbital contents	18	0.5 %
Histochemical and immunoperoxidase studies	1038	29.3 %
Gross examination only	148	4.1 %
Electron microscopic studies	15	0.4 %
Outside referrals for consultation	110	3.0 %
Total	**3,556**	**100 %**

Mushroom-shaped primary intraocular melanoma of the choroid

Photo courtesy of Rebecca Stacy, MD, PhD and Frederick A. Jakobiec, MD



Ophthalmology Resource Centers: Ocular Surface Imaging Center

Director: Pedram Hamrah, MD

Confocal microscopes are available at the Mass. Eye and Ear Ocular Surface Imaging Center (OSIC), which provides non-invasive biopsy of the cornea.

In addition to a standard Confoscan 4, we are utilizing a new, cutting-edge laser scanning confocal microscope: the Heidelberg Retina Tomograph (HRT) 3, with the Rostock cornea module (RCM). The HRT/RCM allows a layer-by-layer analysis of the cornea with an optical resolution of 1 μm. One important clinical application of in vivo confocal microscopy is that it allows for early detection and diagnosis of Acanthamoeba and fungal keratitis which often masquerade as bacterial or viral infections. This not only decreases the need to wait for results of traditional corneal scraping tests but also allows for earlier sight-saving treatments to patients.

Additional equipment available at the OSIC includes:

- An Orbscan and Pentacam for corneal topography
- A Haag-Streit digital slit-lamp photography and video unit
- A specular microscope
- An RTVue-100 Fourier-Domain Optical Coherence Tomograph (OCT, Optovue), which allows for non-invasive, real-time cross- sectional views of the cornea, conjunctiva, and the angle.

Ophthalmology Resource Centers: Research and Clinical Investigation in Ophthalmology

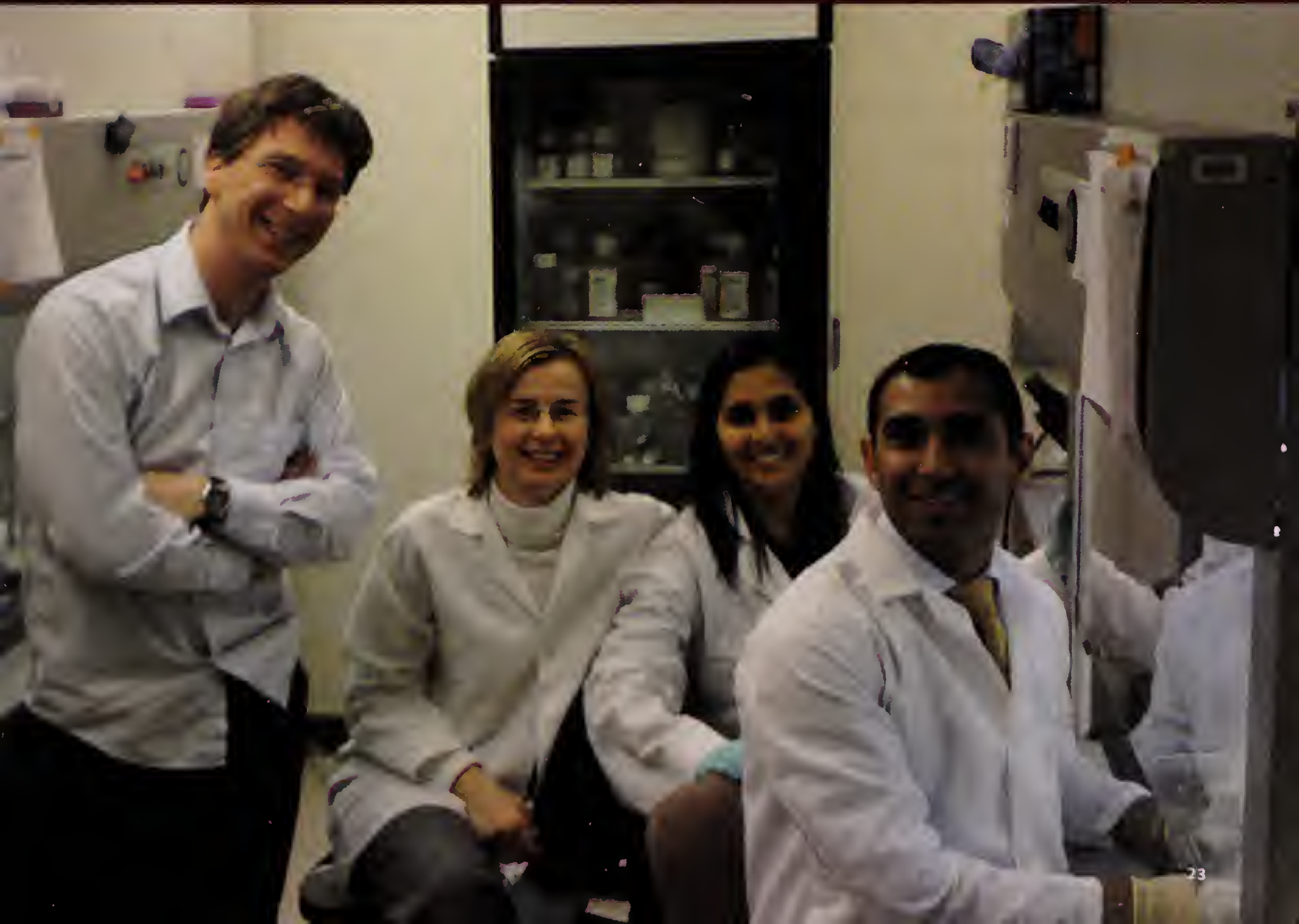
Directors: Richard H. Masland, PhD
Janey L. Wiggs, MD, PhD

Mass. Eye and Ear and its affiliates employ basic scientists, clinician researchers, postdoctoral fellows, clinical coordinators, and research assistants who participate in basic science, translational and clinical research. A diverse and robust research portfolio reflects the high caliber of our research program and the immensely creative and innovative work of our researchers and clinicians. From October 2007 to September 2008, total federal research funding from the National Institute of Health (NIH) exceeded $26 million for the Harvard Department of Ophthalmology.

Physician-scientists from Mass. Eye and Ear's Clinical Research Program conduct innovative translational and clinical research that support the prevention, treatment and cure for disorders of the eye. Clinical research studies test how well new medical approaches work in people by answering scientific questions that aim to find better ways to prevent, screen for, diagnose, and treat a specific disorder. Our ultimate goal is to translate bench research into "bedside" therapies and cures that benefit patients directly.

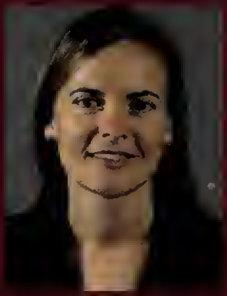
All of our trials undergo a rigorous review process conducted by the Mass. Eye and Ear Human Studies Committee. People who take part in our clinical trials have an opportunity to contribute to knowledge of their specific disorder while receiving the most up-to-date medical care.

Dr. Ula Jurkunas (second from left) and her cornea research team.



Ophthalmology Resource Centers: Contact Lens Service

Director: Jill Beyer, OD



Mass. Eye and Ear's Contact Lens Service staff offers extensive knowledge of contact lens fitting methods, techniques, and newly available lens modalities. The Service provides a wide array of contact lens options, often successfully fitting patients who previously could not wear lenses.

Over the years, extensive research in contact lens use has led to a plethora of new technology, spurring the development of a new generation of lens types that address many visual problems. Mass. Eye and Ear's Contact Lens Service staff can expertly assess and prescribe contact lenses for all the specialty uses below.

- Contact Lenses for Astigmatism
- Bifocal Contact Lenses
- Color Enhancing Contact Lenses
- Contact Lenses for Dry Eyes
- Contact Lenses for Color Deficient Patients
- Prosthetic Contact Lenses
- Post-Surgical and Post-Trauma Contact Lenses
- Specialty Lenses for Keratoconus and Corneal Irregularities

contact lens fitting

Number of contact lens fitted and ordered: 3,815

Therapeutic fits, bandage lenses, and aphakic correction: 1,111

October 2008 to September 2009

Ophthalmology Resource Centers: Optical Services

Director: Thomas Merrill

The Mass. Eye and Ear Optical Shop offers a full-range of comprehensive optical services, from routine fittings to filling prescriptions for highly specialized eyewear. Our highly-trained, licensed and skilled opticians have extensive experience filling difficult or unusual prescriptions while working closely with physicians from our ophthalmic specialty services. Our optical team is committed to service excellence and takes pride in their outstanding quality of work, depth of knowledge and experience, and high degree of customer satisfaction.

The shop carries a wide-range of accessories including Fresnel prisms, Bangerter occlusion foils, ptosis crutches, moisture chambers and an array of clip-ons, flip-ups, cleaners and cords. Our staff provides prompt response to inquiries and also offers free adjustments, minor repairs, and complimentary cleanings. The Optical Shop also has an on-site finish lab for the highest quality eyewear.

Total Eye Glasses Dispensed: 2,917

October 2008 to September 2009

Ophthalmology Resource Centers: International Program

Director, International Program: Camille Condon

Manager, Interpreter Services: Amy Sands

October 2008 to September 2009

Each year, Mass. Eye and Ear staff welcomes and treats patients from all over the world. Recognizing the unique requirements of our international guests, Mass. Eye and Ear established an International Patient Office in 1996 to better serve this patient population and to help coordinate their visits.

We offer on-site language translation services for many languages. If a live interpreter is not available, the International Office can arrange for telephone conference translation services through AT&T's Language Line. This service offers translation assistance in 35 different languages and is readily available to patients and physicians 24 hours a day, seven days a week.

Number of Interpreter Usages by Mass. Eye and Ear Patients

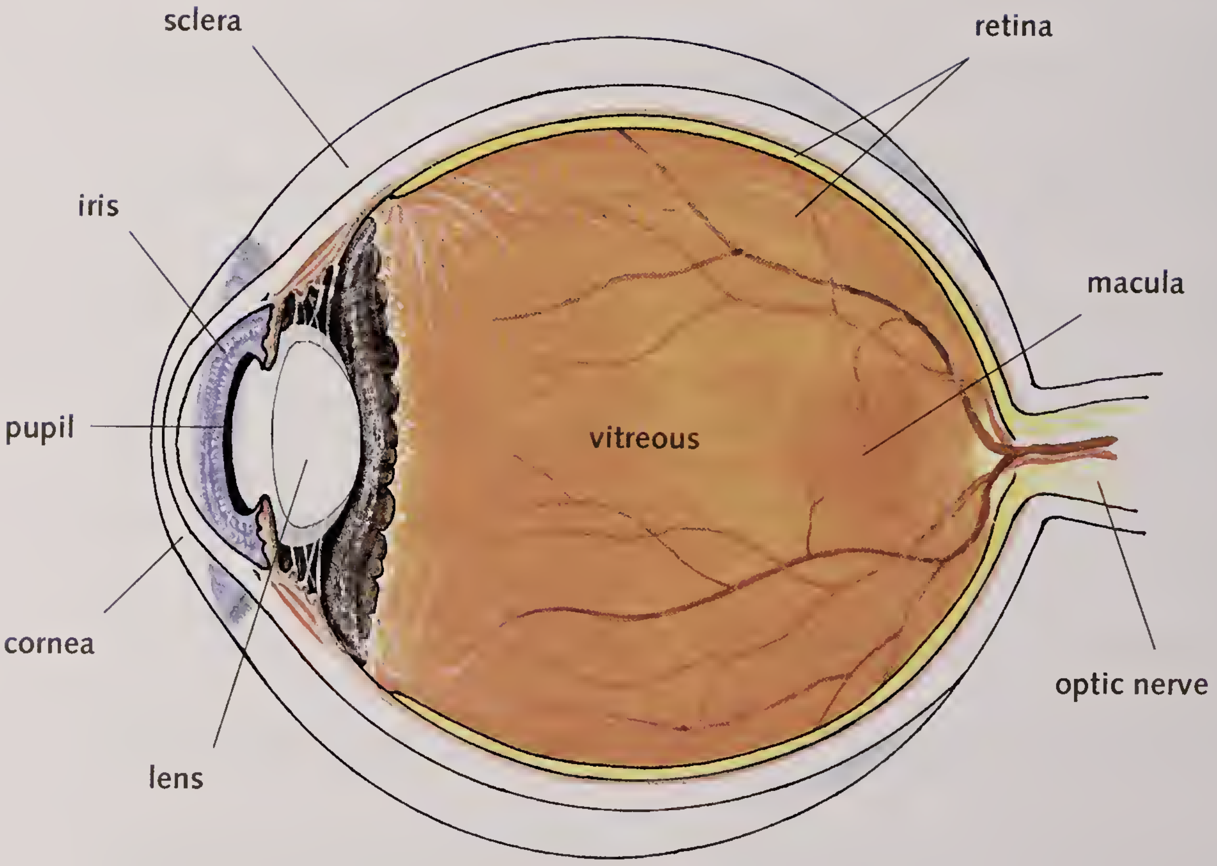
In-person	
Ophthalmology outpatient visits	1,484
Emergency Department	343
Operating rooms/surgeries	220
Telephone conference	
AT&T Language Line service	1,095

Ophthalmology Resource Centers: Languages Available through Interpreter Services

October 2008 to September 2009

- Albanian
- Amharic
- Arabic
- ASL American Sign Language
- Bengali
- Bosnian
- Burmese
- Cambodian
- Cantonese / Mandarin
- Ethiopian
- Farsi
- Filipino
- French
- German
- Greek
- Haitian/Creole
- Hebrew
- Hindi
- Italian
- Japanese
- Korean
- Lebanese
- Persian
- Polish
- Portuguese
- Russian
- Serbo-Croatian
- Somali
- Spanish
- Swahili
- Thai
- Tibetan
- Turkish
- Urdu
- Vietnamese

Eye Anatomy


sclera
retina
iris
macula
pupil
vitreous
cornea
optic nerve
lens

Comprehensive Ophthalmology and Cataract Consultation Service

Massachusetts
Eye and Ear
Infirmary

Comprehensive Ophthalmology and Cataract Consultation Service

Director: Sherleen H. Chen, MD

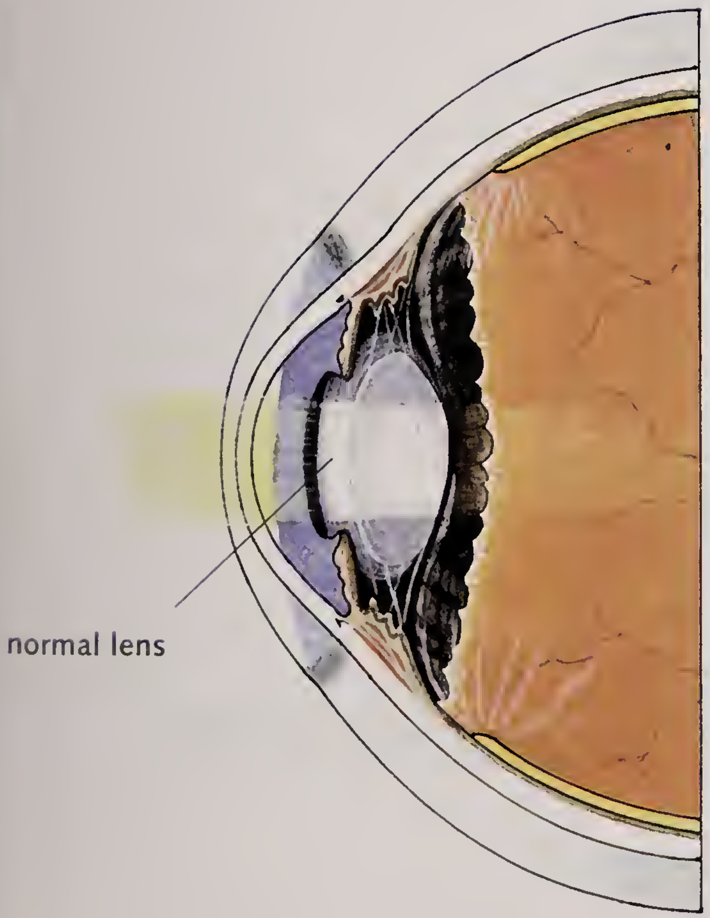
The Comprehensive Ophthalmology team provides a full spectrum of integrated patient care, from annual eye exams and continued ophthalmology care, to subspecialty referrals. There are more than 20,000 patient visits to our Comprehensive Ophthalmology Service each year. Our services range from routine eye care and screenings for systemic diseases like diabetes, to the management of complex ophthalmic diseases such as cataracts and glaucoma. In addition, we have dedicated services to offer Vision Care for the Deaf in our main campus location.

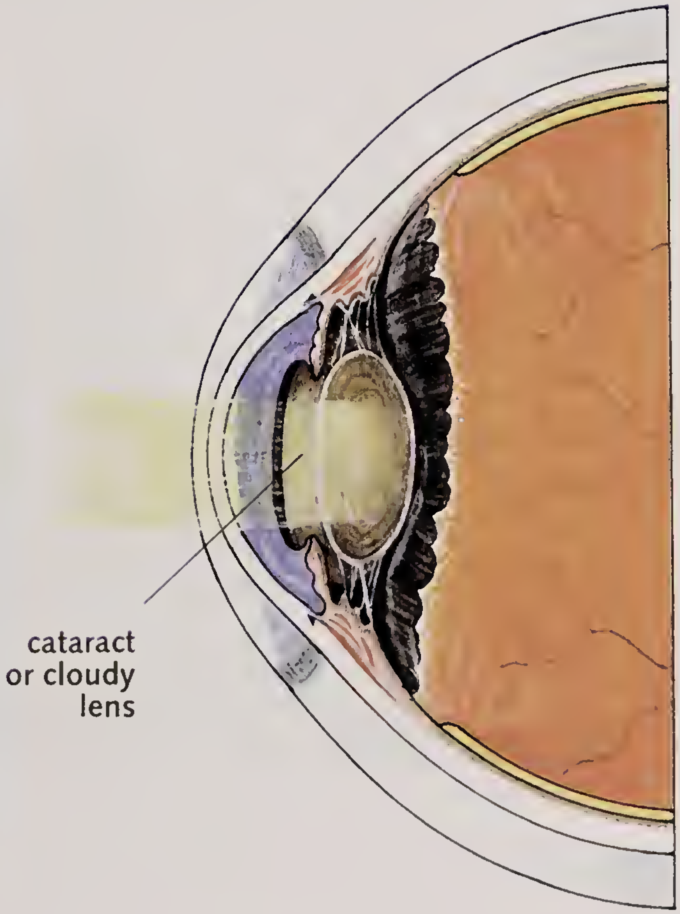
Select Resources

- Humphrey Visual Field Analyzer (Zeiss)
- Heidelberg Retinal Tomograph with a HRT retina imaging module (Heidelberg)
- Epic 2000 Refracting Station (Nidek)
- IOL Master (Zeiss)
- Contact Ascan (Sonomed)
- Ultrasonic Pachymeter/Pachette (DGH Technologies)
- ARK 530 A Auto Refractor/Kearatometer (Nidek)

The most common surgery performed by Mass. Eye and Ear's Comprehensive Ophthalmology Service is cataract extraction with intraocular lens implantation. For all locations (Mass. Eye and Ear main campus as well as other locations), there were 1,109 cataract surgeries performed during the July 2008 to June 2009 period. The outcomes of the 974 cataract surgeries performed on patients seen at the main Boston campus and on patients with sufficient follow-up for analysis are described here.

Another common surgical procedure performed by our comprehensive ophthalmologists is pterygium surgery, the outcomes of which are also reported.



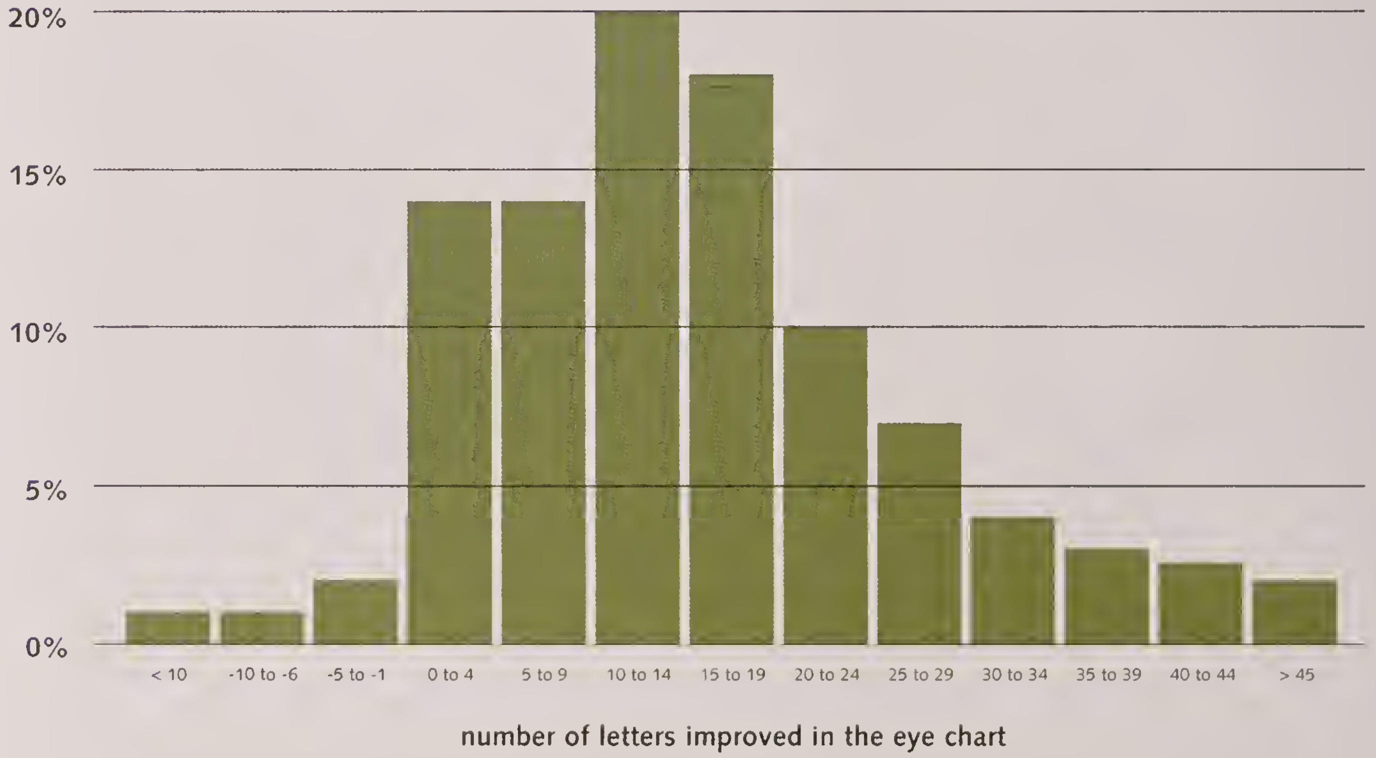


Cataract Surgery: Visual acuity improvement by three months follow-up

July 2008 to June 2009

The chart below depicts the results of 974 cataract surgeries that were performed on patients who were seen at the Mass. Eye and Ear main Boston campus and who had sufficient follow-up for analysis.

Over 80% of patients undergoing cataract surgery enjoy more than 5 letters of visual acuity improvement.



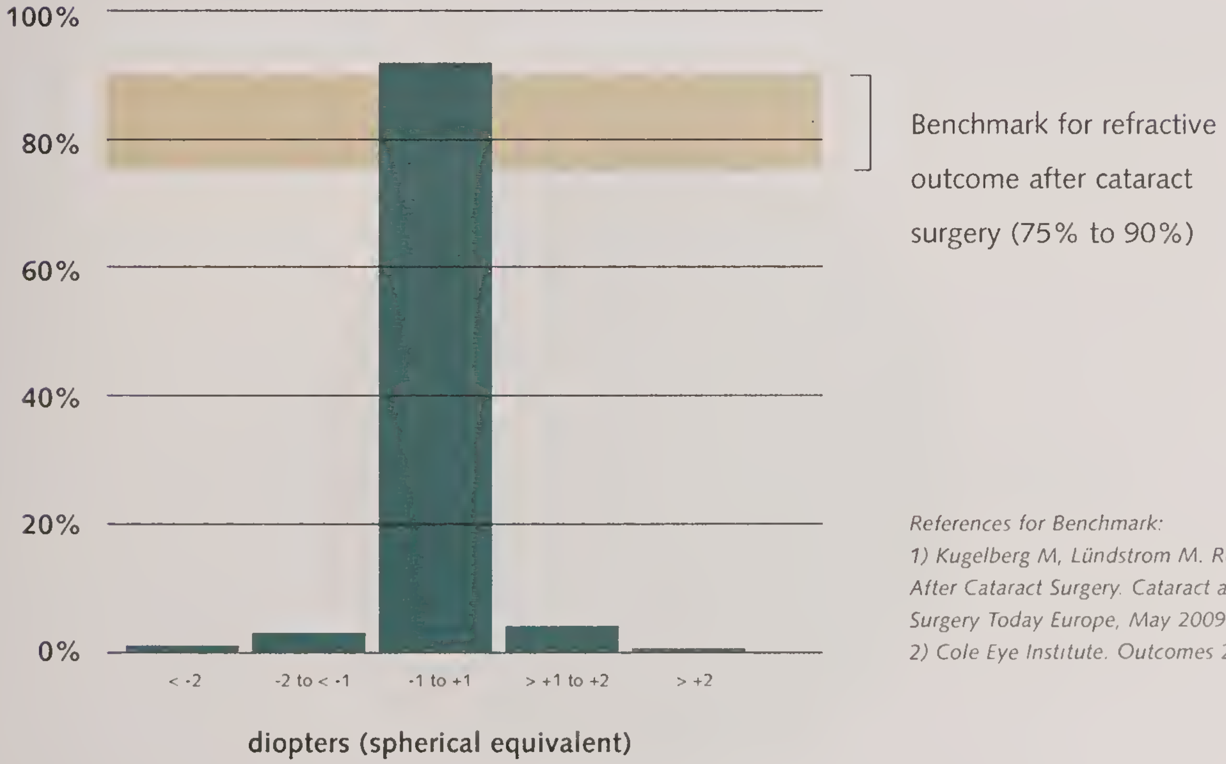
N = 974

Cataract Surgery: Difference between actual and target refraction (spherical equivalent) by three months follow-up

July 2008 to June 2009

The chart below depicts the results of 974 cataract surgeries that were performed on patients who were seen at the Mass. Eye and Ear main Boston campus and who had sufficient follow-up for analysis.

92% of cataract patients achieved within 1 diopter of target refraction after cataract surgery. These surgical results exceed national and international benchmarks.



N = 974

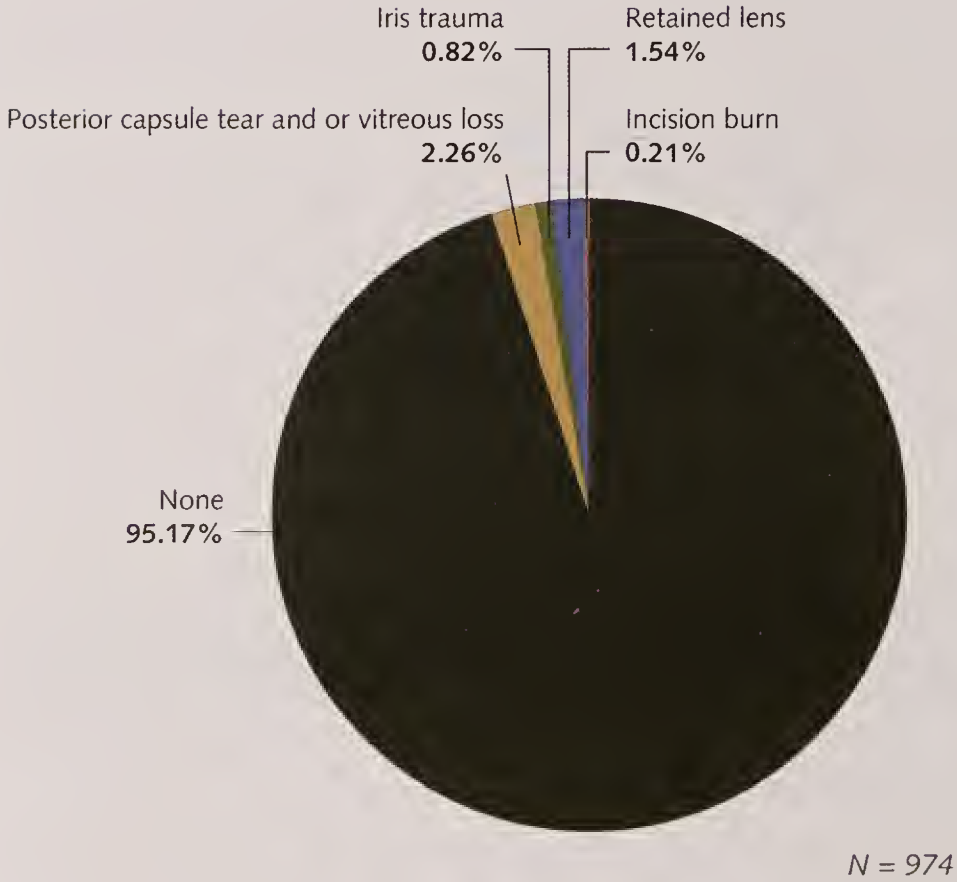
References for Benchmark:
1) Kugelberg M, Lündstrom M. Refractive Outcome After Cataract Surgery. Cataract and Refractive Surgery Today Europe, May 2009.
2) Cole Eye Institute. Outcomes 2008.

Cataract Surgery: Intra-operative complications

July 2008 to June 2009

Depicted below are the intra-operative complications of the 974 cataract surgeries that were performed on patients who were seen at the Mass. Eye and Ear main Boston campus and who had sufficient follow-up for post-operative analysis.

Over 95% of cataract surgery patients had no intra-operative complications.

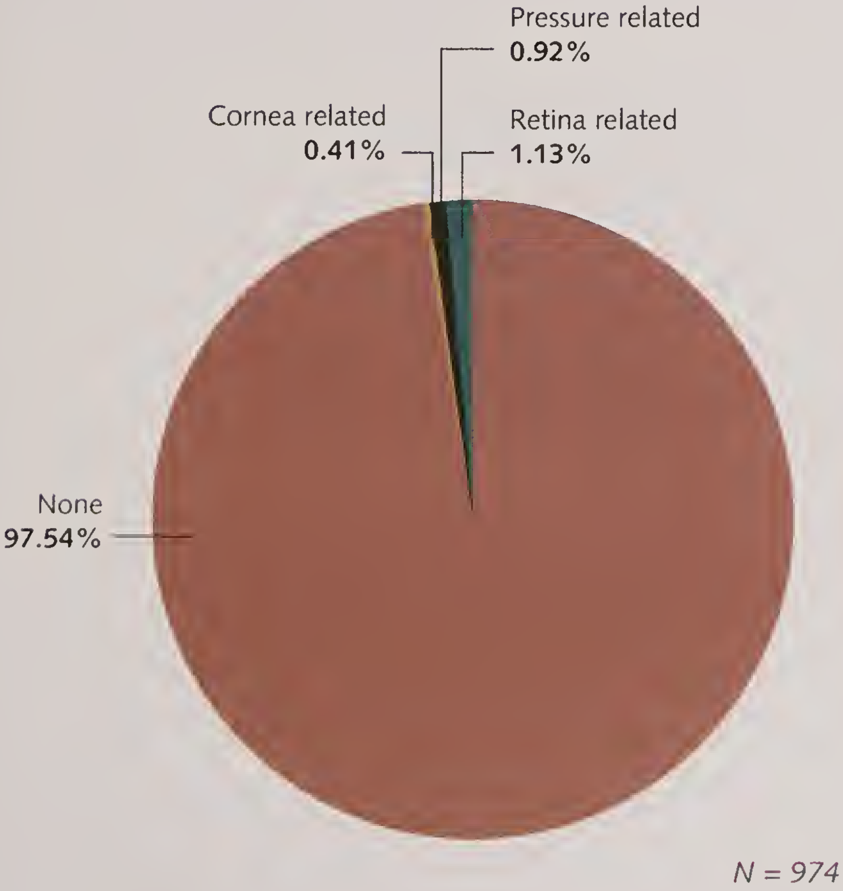


Cataract Surgery: Post-operative complications by three months follow-up

July 2008 to June 2009

Depicted below are the post-operative complications of the 974 cataract surgeries that were performed on patients who were seen at the Mass. Eye and Ear main Boston campus and who had sufficient follow-up for analysis.

Over 97% of cataract surgery patients had no post-operative complications.

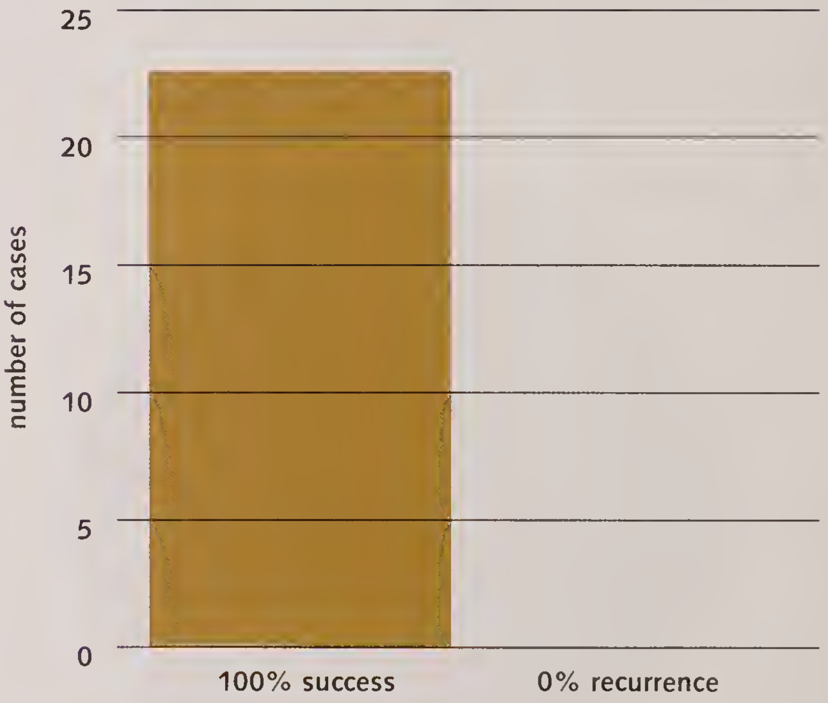


Pterygium Surgery: Pterygium recurrence at three months follow-up

July 2008 to June 2009

The graph below depicts the outcomes of pterygium surgery performed at Mass. Eye and Ear. Twenty-five surgeries were performed during a one-year period, but two cases did not have sufficient follow-up for outcomes analysis. Of the 23 remaining patients that had three months of follow-up data, none had experienced a recurrence of the excised pterygium at their three month follow-up.

100% of patients having pterygium surgery achieved surgical success at 3 months.



Surgical success is defined as no pterygium recurrence at three months.

N = 23

Glaucoma Service

Massachusetts
Eye and Ear
Infirmary

Glaucoma Service

Director: Louis R. Pasquale, MD

Glaucoma is a group of disorders in which the main risk factor is high eye pressure within the eye. All glaucoma disorders are characterized by vision loss caused by damage to the optic nerve. The optic nerve provides the pathway from the eyeball to the brain. If a doctor discovers the disease at an earlier stage, and the patient follows directions carefully, more vision can be saved.

The Glaucoma Service at Mass. Eye and Ear was founded by Paul A. Chandler, MD, and W. Morton Grant, MD. Mass. Eye and Ear's glaucoma specialists use the latest technology and equipment to diagnose and treat the disease which is a leading cause of blindness in Americans and which is the leading cause of blindness among African-Americans. In addition, our ongoing research investigations include identifying risk factors – such as genes that predispose individuals to this blinding eye disease, discovering methods for early disease detection, and exploring novel therapeutics.

The most common incisional surgeries performed by the Mass. Eye and Ear Glaucoma Service are trabeculectomy surgery and tube shunt surgery. Patient outcomes for these incisional surgeries are reported for procedures performed during the two-year period from July 2007 to June 2009.

Select Resources

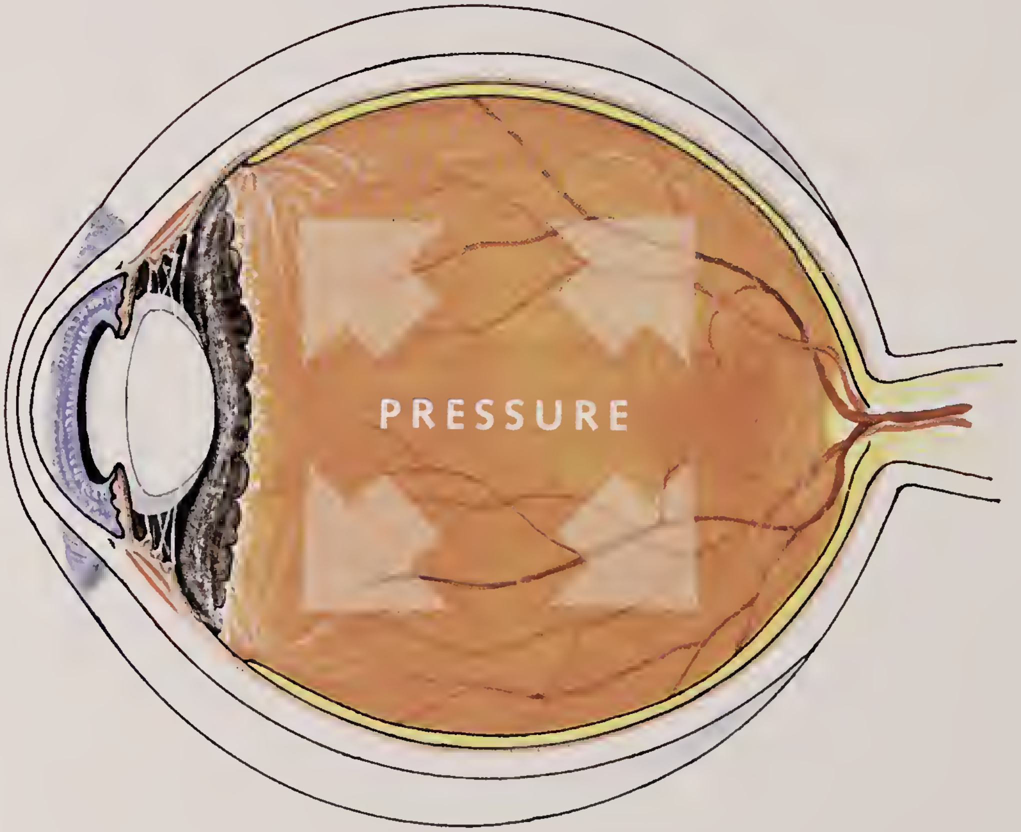
- GDX Scanning Laser Polarimeter for retinal nerve fiber analysis (Zeiss)
- Stratus Optical Coherence Tomography Model 3000 (Zeiss)
- Spectral Domain Ophthalmic Imaging System (Bioptigen)
- 2 Humphrey Visual Field Analyzers (Zeiss)
- Frequency Doubling Technology (FDT) Visual Field Instrument (Zeiss)
- Goldman Visual Field Machine (Haag Streit)
- Visucam ProNM Fundus Camera (Zeiss)
- Contact Ascan (Sonomed)
- Trabectome (NeoMedix)
- Endocyclophotocoagulation (EndoOptiks)
- Canaloplasty (iScience Interventional)
- Laser Blood Flowmeter (Canon)
- Dynamic Contour Tonometry (Ziemer)

Glaucoma Surgery: Distribution of surgery types

July 2007 to June 2009

Two of the most common laser procedures required by glaucoma patients are laser peripheral iridotomy and laser trabeculoplasty. The following table includes both argon laser trabeculoplasty (ALT) and selective laser trabeculoplasty (SLT).

Mass. Eye and Ear's Glaucoma Service can perform a wide range of laser and surgical procedures.



Glaucoma implant surgeries require the insertion of an implant or artificial tubing to lower the eye pressure. The two most common glaucoma implant devices used in the United States are the Ahmed Glaucoma Valve and the Baerveldt Glaucoma Implant. Trabeculectomy surgery is the gold standard incisional surgery that is usually performed first in patients who require glaucoma surgery. Trabectome surgery is a form of minimally invasive glaucoma surgery.

PROCEDURE TYPE	N	%
Laser Peripheral Iridotomy	291	28.2%
Laser Trabeculoplasty	288	27.9%
Glaucoma Implant	164	15.9%
Combined Surgeries	120	11.6%
Trabeculectomy (no previous scarring)	80	7.7%
Revision of Glaucoma Implant	39	3.8%
Trabeculectomy (with previous scarring)	32	3.1%
Other (including Trabectome)	19	1.8%
Total	**1,033**	**100.0%**

Glaucoma Surgery: Distribution of surgery types

July 2007 to June 2009

To attain the best outcomes, glaucoma patients often need combined surgeries that require the added expertise of a retina or cornea specialist. The types of combined surgeries performed in the Glaucoma Service are detailed in the table below.

Mass. Eye and Ear's glaucoma surgeons can perform almost all types of combined surgeries and have immediate access to in-house retina and cornea experts with whom s/he can collaborate.

Glaucoma procedures are most often performed with cataract surgery (phacoemulsification).

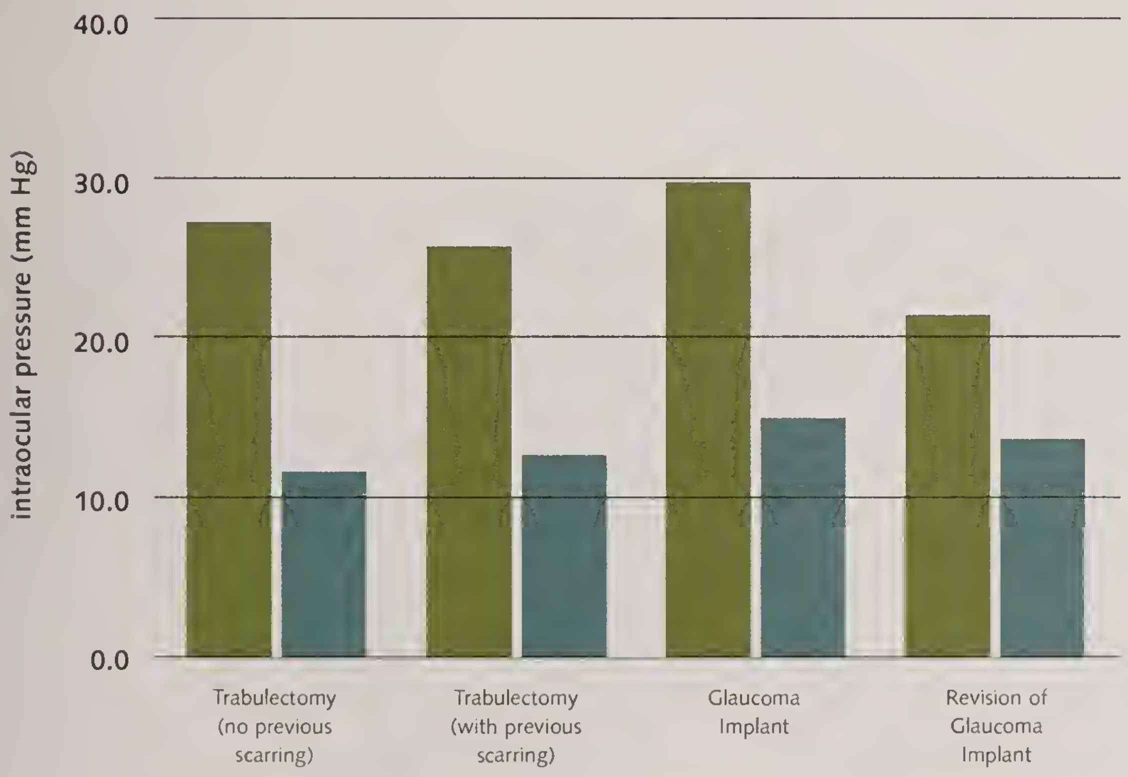
SURGERY TYPE	N	%
Trabeculectomy and Phacoemulsification	54	45.0%
Trabectome and Phacoemulsification	25	20.8%
Other	16	13.3%
Glaucoma Implant and Phacoemulsification	12	10.0%
Glaucoma Implant and Pars Plana Vitrectomy	8	6.7%
Glaucoma Implant and Keratoprosthesis	5	4.2%
Total Combined Surgeries	120	100.0%

Trabeculectomy and Glaucoma Implant Surgery: Average intraocular pressure change at three months follow-up

July 2007 to June 2009

A total of 315 eyes had trabeculectomy surgery (with or without previous scarring) or glaucoma implant surgery (primary or revision) over a two-year period. The average intraocular pressure changes at 3 months are depicted for the 300 eyes that had sufficient follow-up data for analysis.

Effects of Trabeculectomy and Glaucoma Implant Surgery on Eye Pressure



🟩 Average Pre-op IOP

🟦 Average Post-op IOP

N = 300

The goal of glaucoma surgery is to lower intraocular pressure. Although the target or goal intraocular pressure varies per individual, normal eye pressures are in general from 10 mm Hg to 21 mm Hg.

The 300 eyes evaluated include:

- 79 trabeculectomies without scarring
- 32 trabeculectomies with previous scarring
- 155 primary tube surgeries
- 34 tube revisions

Trabeculectomy and Glaucoma Implant Surgery: Vision change at three months follow-up

July 2007 to June 2009

A total of 315 eyes had trabeculectomy surgery (with or without previous scarring) or glaucoma implant surgery (primary or revision) over a two-year period. The vision changes at 3 months are depicted for the 296 eyes that had sufficient follow-up data for analysis.

The majority of patients having glaucoma surgery have stable vision after surgery.

Visual outcome from glaucoma surgery is usually considered successful when there is no further deterioration in vision three months after surgery.

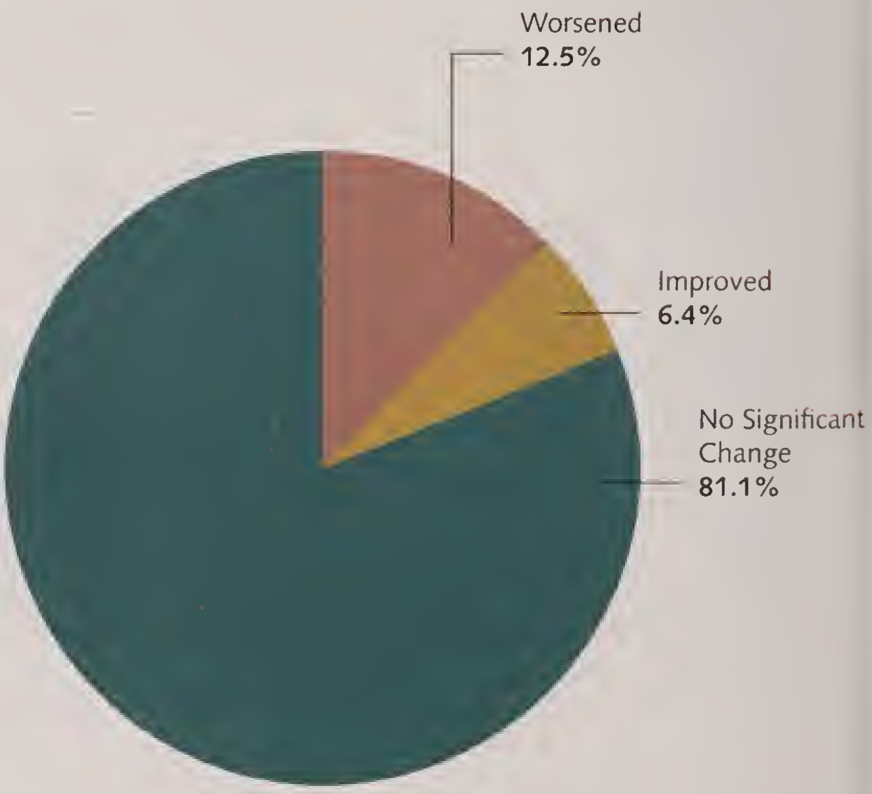
Improved = more than 2 lines of improvement compared to pre-operative vision
No Significant Change = inclusive of 2 lines better or worse
Worsened = more than 2 lines worse

Benchmark: Visual outcomes for trabeculectomies and tubes at 1 year: 32% to 33% of patients with vision loss of 2 lines of vision or more.

Reference: Gedde SJ, et al. Treatment outcomes in the tube versus trabeculectomy study after one year of follow-up. American Journal of Ophthalmology 2007;143(1):9-22.

The 296 eyes evaluated include:

- 79 trabeculectomies without previous scarring
- 32 trabeculectomies with previous scarring
- 152 primary tube surgeries
- 33 tube revisions



N = 296

Trabeculectomy and Glaucoma Implant Surgery: Intra-operative complications

July 2007 to June 2009

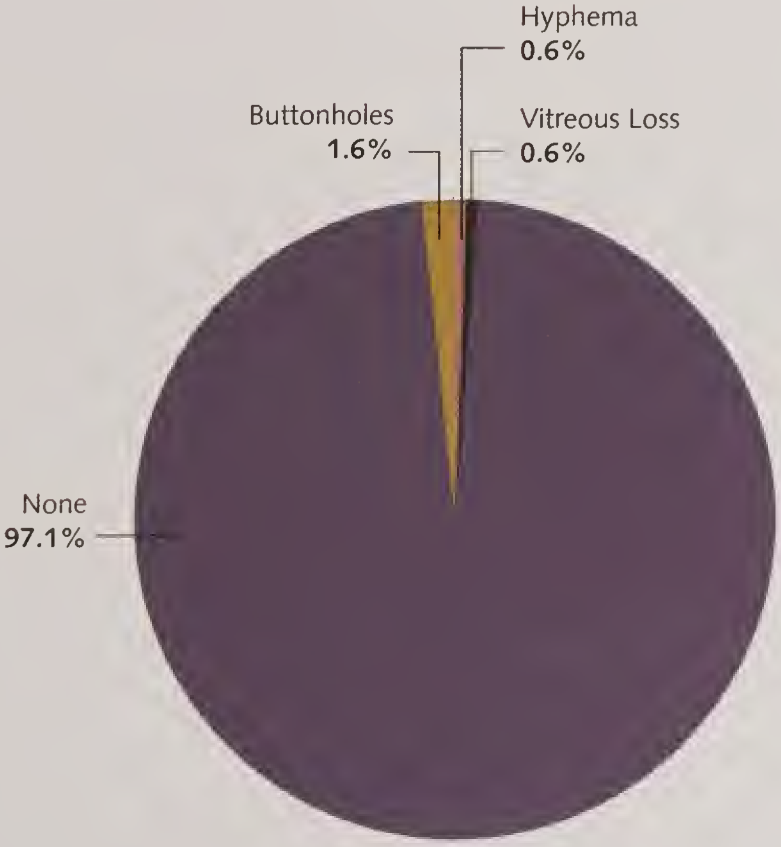
Of the 315 eyes that had trabeculectomy surgery (with or without previous scarring) or glaucoma implant surgery (primary or revision) over a two-year period, the intra-operative complications of the 308 eyes with sufficient follow-up data for analysis were recorded.

Over 97% of patients have no intra-operative complications from glaucoma surgery.

Scleral Flap Trauma = **0.0%**
Suprachoroidal Hemorrhage = **0.0%**

The 308 eyes evaluated include:

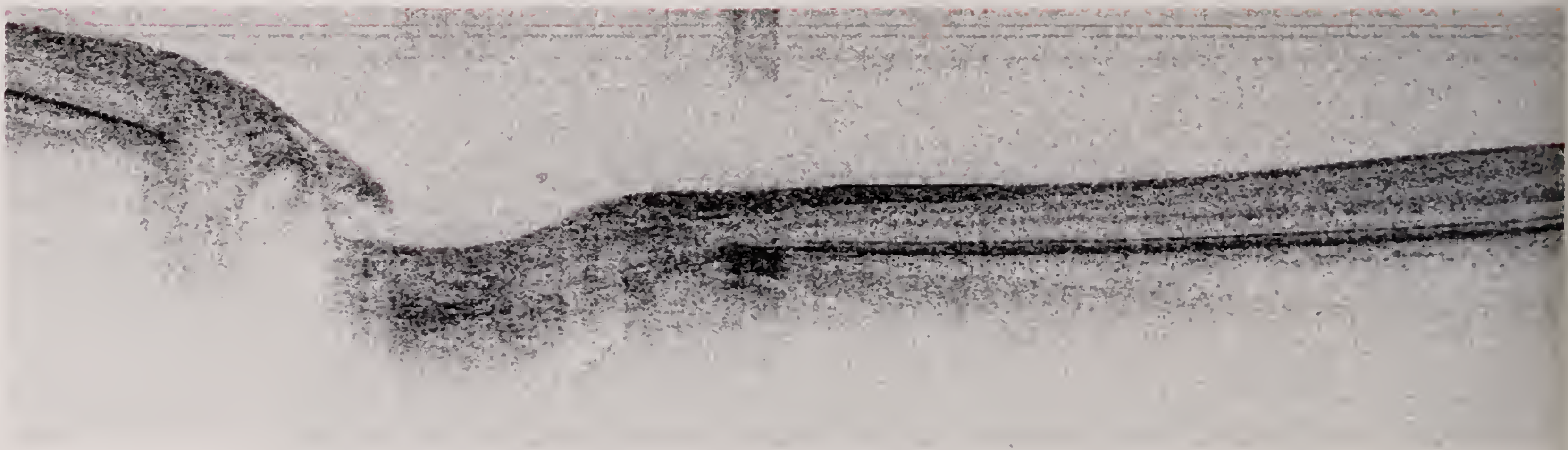
- 78 trabeculectomies without scarring
- 32 trabeculectomies with previous scarring
- 159 primary tube surgeries
- 39 tube revisions



N = 308

First video-rate spectral domain optical coherence tomography image of the eye

picture courtesy of Teresa C. Chen, MD and Johannes F. de Boer, PhD



Cornea and Refractive Surgery Service

Massachusetts
Eye and Ear
Infirmary

Cornea and Refractive Surgery Service

Director: Reza Dana, MD, MSc, MPH

The Cornea and Refractive Surgery Service is dedicated to providing the best and most scientifically advanced medical and surgical care to patients with corneal, ocular surface, and refractive disorders through excellence in patient care, research, and subspecialty training of young ophthalmologists. Our highly skilled surgeons utilize the latest technology and laser tools to offer the most advanced vision correction procedures.

For decades, our Cornea team has been at the forefront of many new medical and surgical advances in the field. New programs have been developed for patients with severe corneal scarring, including stem cell transplantation, ocular surface reconstruction, lamellar keratoplasty and keratoprosthesis (artificial cornea) surgery. The Cornea and Refractive Surgery Service also serves as a regional, national and international resource for the management of difficult-to-treat and sight-threatening diseases such as severe corneal ulcers, viral diseases, scarring diseases and severe cases of ocular surface disease (such as dry eye and neovascularization of the cornea) that have not responded to conventional therapies.

Select Resources

- Imaging Module IM 900 Video Photo Slit Lamp (Haag Streit)
- Heidelberg Retinal Tomograph with an anterior segment imaging module (Heidelberg)
- Confoscan 4 Confocal Microscope (Nidek)
- Ladarwave Custom Cornea Wave front System Aberrometer (Alcon)
- Cellchek SP-RU Noncontact Specular Microscope (Conan)
- Pentacam HR 3D Scheimpflug Camera (Oculus)
- Zywave Wave Front Analyzer/Aberrometer (Bausch & Lomb)
- Orbscan II Corneal Topographer (Bausch & Lomb)
- Ultrasonic Pachymeter (KMI Surgical Products)
- Contact Ascan (Sonomed)
- 30B Classic Pneumotonometer (Mentor)
- Topographer (Oculus)
- Smart System II 20/20 Wireless Remote Visual Acuity & Fixation System (M&S Technologies)
- 2 WaveLight Allegro Analyzers (Alcon)
- Spectral Domain Optical Coherence Tomography (Optovue)

Cornea Surgery

July 2008 to June 2009

A total of 450 surgeries were performed by Mass. Eye and Ear's Cornea Service between July 2008 and June 2009. Of these 450 surgeries, 140 were penetrating keratoplasties (PK) and Descemets stripping endothelial keratoplasty (DSEK). Other surgeries included are (but not limited to): keratoprothesis surgery, deep anterior lamellar keratoplasty (DALK), and cataract surgery. Pictured below: Dr. James Chodosh

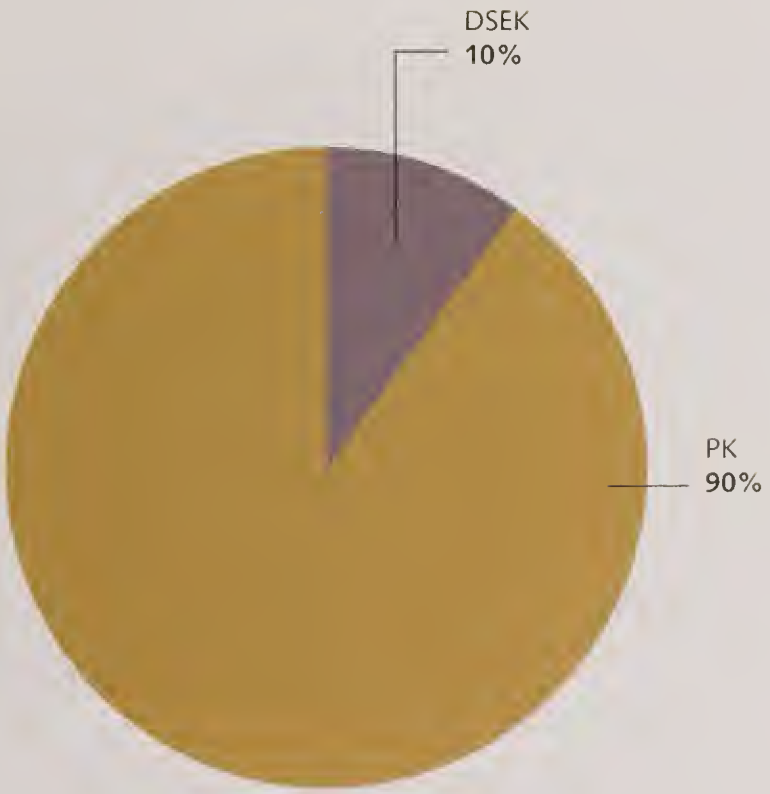
Cornea Surgery: Distribution of PK and DSEK surgeries

July 2008 to June 2009

Two of the most commonly performed surgeries by the Mass. Eye and Ear Cornea Service were penetrating keratoplasty (PK) and Descemets stripping endothelial keratoplasty (DSEK). Of these 140 surgeries, 90 percent (126/140) were PKs and 10 percent (14/140) were DSEK surgeries.

PK is a corneal transplant operation in which a diseased cornea, which is cloudy and opaque, is removed and replaced with a clear, cadaver cornea to restore vision.

In conditions where the cornea has minimal to no scarring, **DSEK** can be employed. In DSEK, the diseased Descemet's membrane (or inner layer of the cornea) is removed and replaced by donor transplant tissue. This can be performed through a smaller incision, which may result in a more rapid rate of visual recovery.



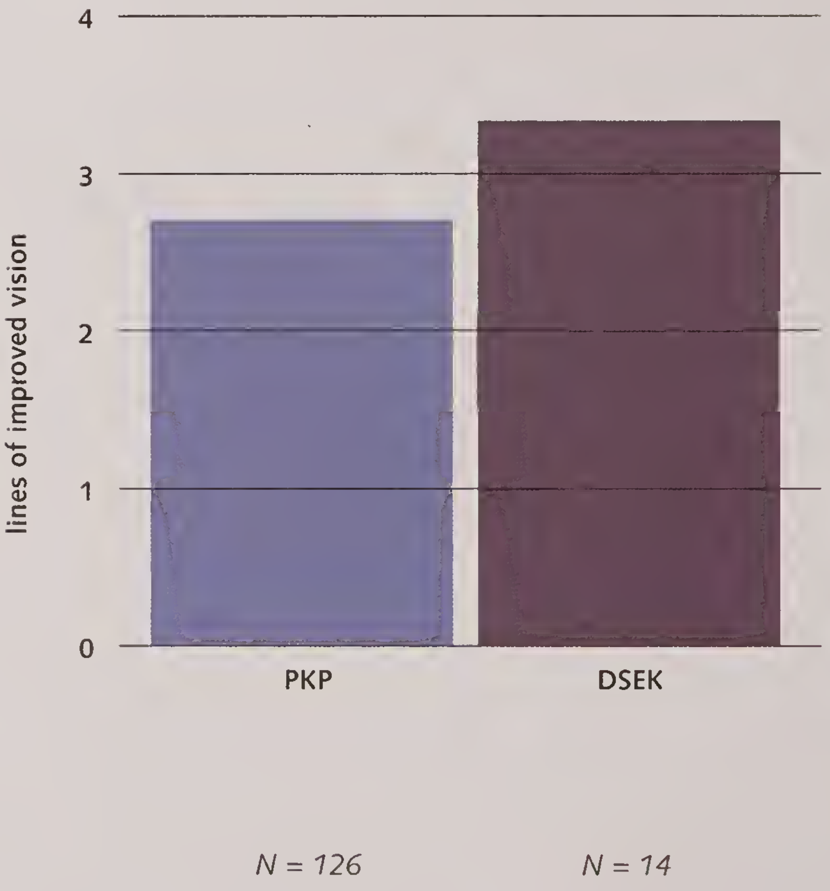
N = 140

Cornea Surgery: Visual acuity results of PK and DSEK surgeries at three months follow-up

July 2008 to June 2009

The goal of penetrating keratoplasty (PK) and Descemets stripping endothelial keratoplasty (DSEK) surgery is to improve vision. The 126 patients who had PK experienced an average improvement in visual acuity of 2.7 lines. The 14 patients who underwent DSEK experienced an average improvement of 3.3 lines.

Average Visual Improvement after PK and DSEK

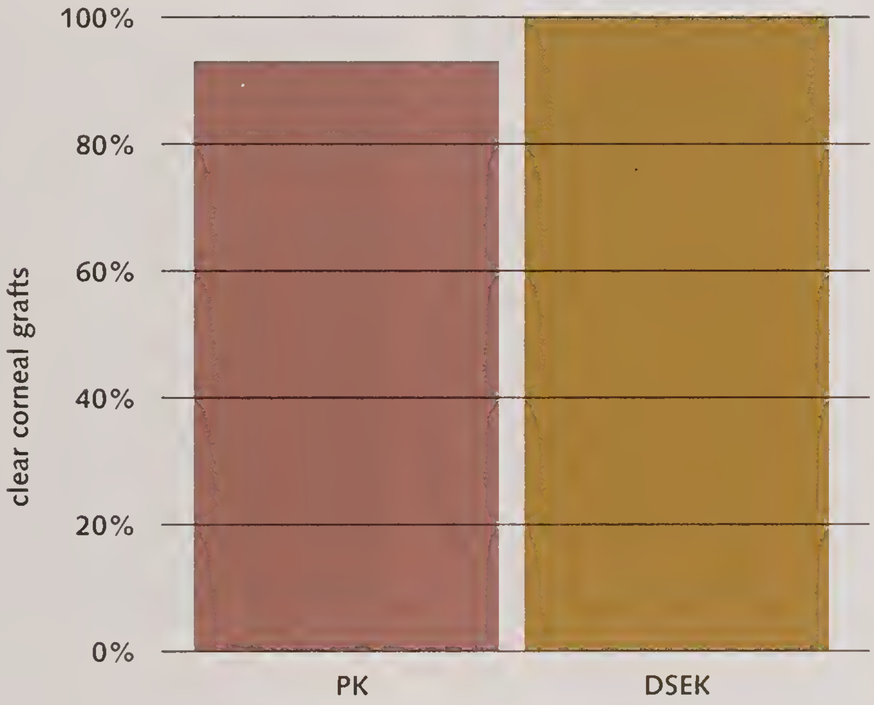


Cornea Surgery: Clear corneal grafts for PK and DSEK at three months follow-up

July 2008 to July 2009

The goal of penetrating keratoplasty (PK) and descemets stripping endothelial keratoplasty (DSEK) surgery is to achieve a clear cornea within three months of surgery.

Over 96% of patients having either PK or DSEK surgery achieved surgical success.

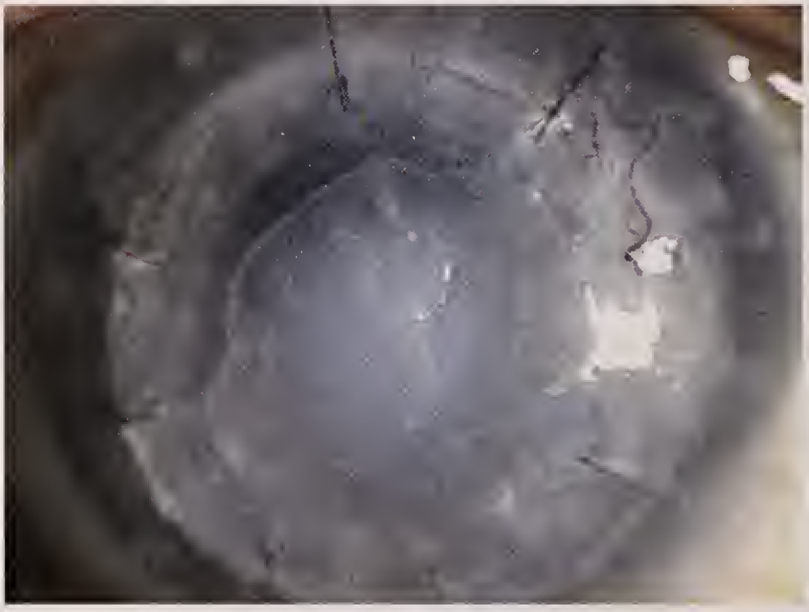


Surgical Success Rates for PK and DSEK

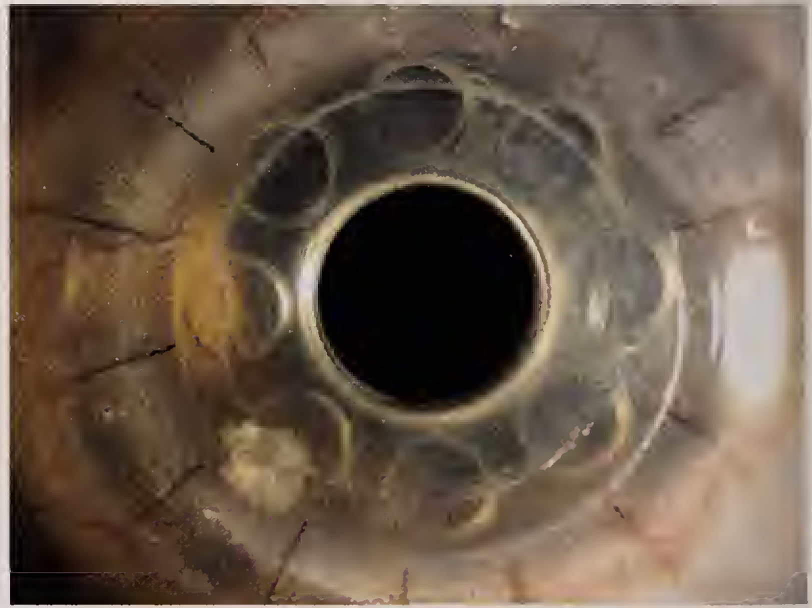
N = 126 *N = 14*

Keratoprosthesis Surgery (The Boston Kpro)

pictures courtesy Joseph Ciolino, MD



"hand motions" vision pre-op



20/25 vision post-op

Keratoprosthesis Surgery: Visual acuity outcomes

2003 to 2008

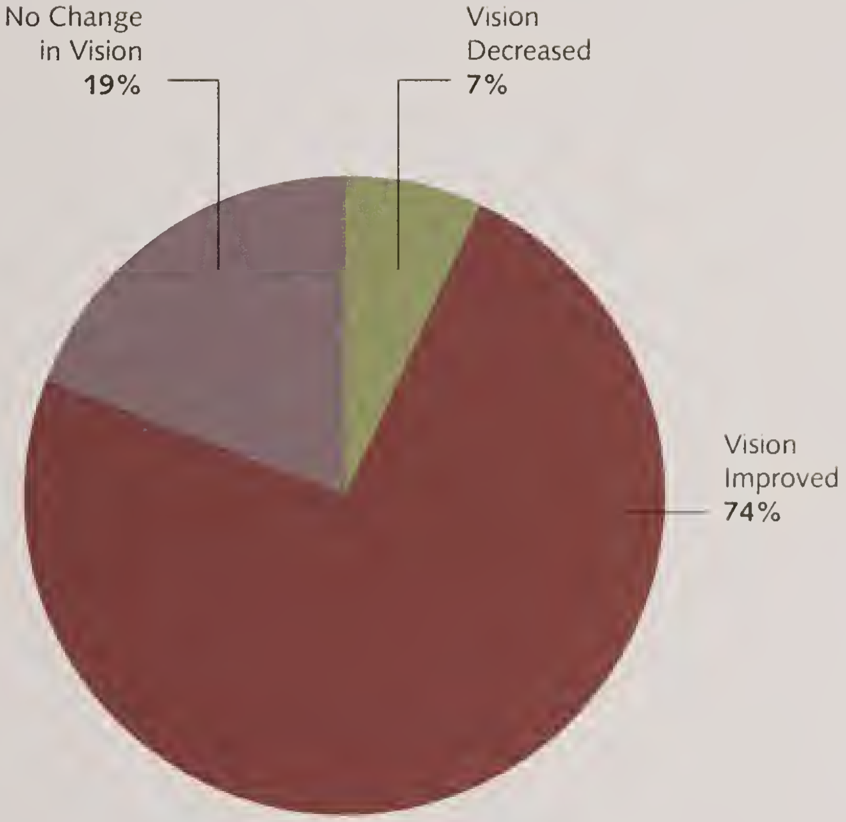
The pie chart below depicts vision outcomes data for patients who received a Boston KPro with a minimum of two years of follow-up at Mass. Eye and Ear. Patients with autoimmune diseases and chemical burns are known to be poor prognostic groups for Kpro surgery, so these patients were excluded from the analysis. The results below depict the 82 eyes that met inclusion/exclusion criteria.

The Boston Keratoprosthesis (Kpro) is an artificial cornea developed at Mass. Eye and Ear by Claes Dohlman, MD, PhD. Dr. Dohlman is former Chief and Chair of the Department of Ophthalmology and currently Emeritus Professor of Ophthalmology at Harvard Medical School (HMS).

In development since the 1960s, the Kpro received FDA clearance in 1992. It is the most commonly used artificial cornea in the U.S. and the world with more than 3,000 implantations to date. The Kpro is reserved for patients blinded by cornea disease and for whom a standard corneal transplant is not a viable option.

The average vision pre-operatively was "hand motion" and the average vision after two years was 20/100. For the majority of patients, vision is limited by glaucoma and retinal diseases. This chart demonstrates that nearly three-quarters of the patients receiving a Boston K-Pro experienced vision improvement after two years.

Reference: Ament JD, Stryjewski TP, Ciolino JB, Todani A, Chodosh J, Dohlman CH. Cost-Effectiveness of the Boston Keratoprosthesis. Am J Ophthalmol 2010; 149: 221-228.



N = 82

Refractive Surgery

Massachusetts
Eye and Ear
Infirmary

Refractive Surgery

Director: Roberto Pineda, II, MD

Refractive surgery — commonly known as laser vision correction — is a term given to surgical procedures designed to correct certain vision problems such as myopia (nearsightedness), hyperopia (farsightedness) and astigmatism. These procedures use an excimer laser beam to help reshape the cornea. An excimer laser produces "cool" light beams which are ideal for refractive surgery, and these procedures are done on an outpatient basis. The two most common procedures performed with the excimer laser are photorefractive keratectomy (PRK) and laser in-situ keratomileusis (LASIK).

Select Resources

- Eye Q Allegretto Wave 400 Hertz Excimer Laser System (Alcon)
- Star S4 Excimer Laser System (VISX/AMO)
- Technolas Excimer Laser System (Bausch & Lomb)
- Intralase FS Femtosecond Laser System (AMO)
- VISX Wavescan Wave Front Aberrometer (AMO)
- Epivision Epitome (Gebauer)
- Conductive Keratoplasty System (Viewpoint)
- Hansatome Microkeratomes (Bausch & Lomb)
- 30B Classic Pneumotonometer (Mentor)

Some of the refractive procedures offered by the Refractive Surgery Service include:

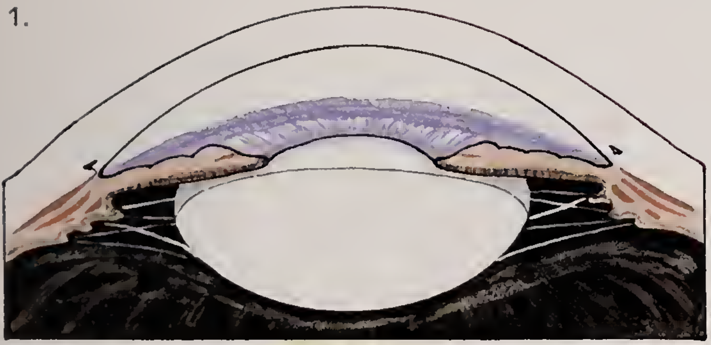
- LASIK (laser-assisted in situ keratomileusis)
- PRK (photorefractive keratectomy)
- PTK (photo-therapeutic keratectomy)
- AK (astigmatic keratotomy)
- Intacs (intrastromal corneal ring segments)
- Visian ICL phakic intraocular lens

Cataract surgery with premium intraocular lenses (IOLs) are also offered for patients who want this option. Examples of these lenses include (but are not limited to):

- Acrysof Toric
- ReStor
- Tecnis multifocal
- Crystalens

Refractive Surgery

1.



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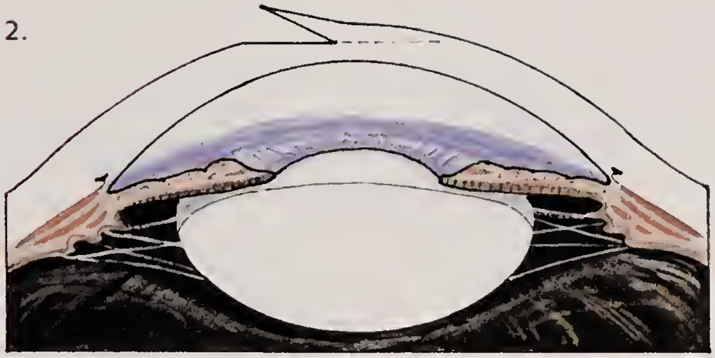

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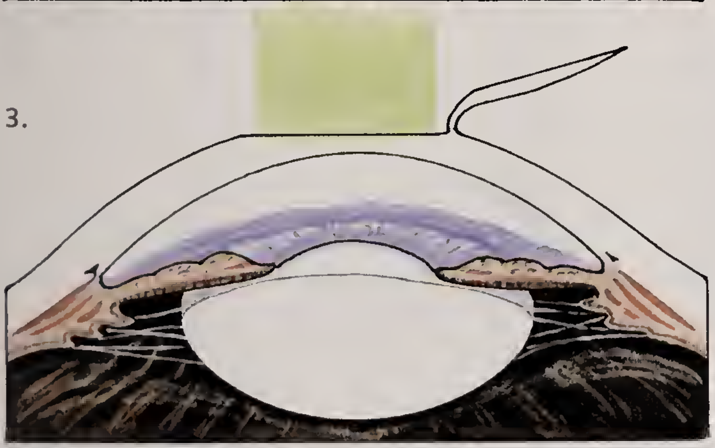

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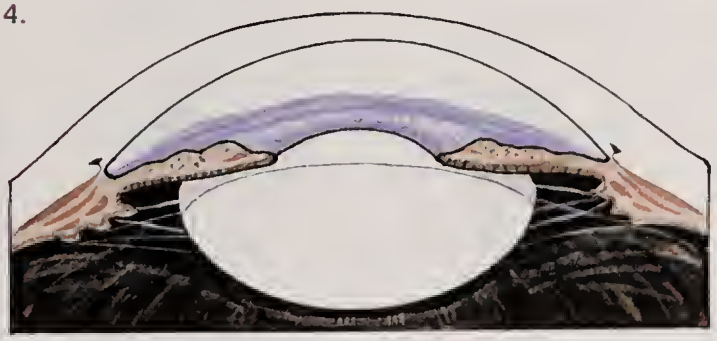


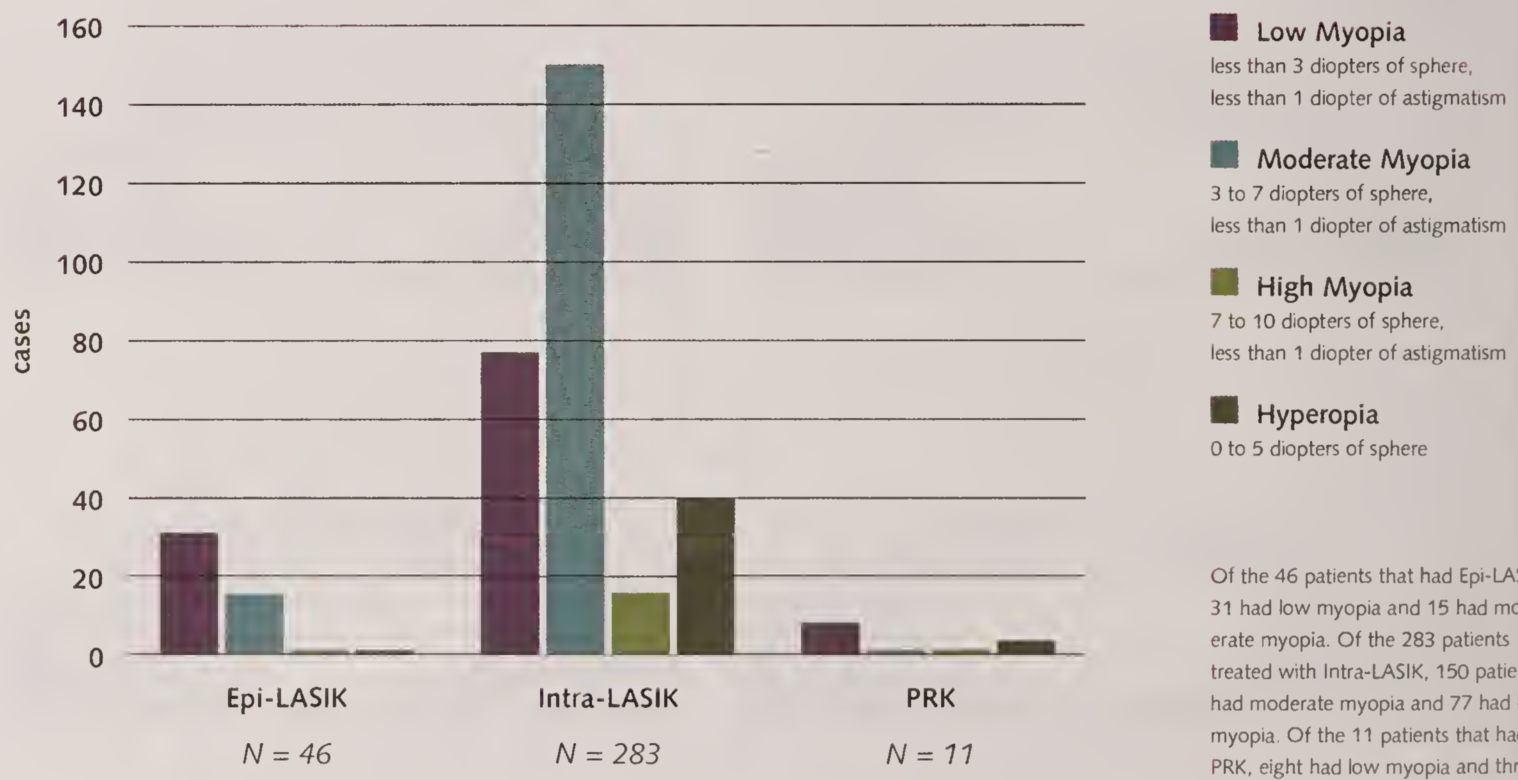
Refractive Surgery LASIK and PRK: Degree of refractive error and choice of refractive procedure

July 2008 to June 2009

The graph below shows the distribution of refractive errors treated by three different refractive procedures:

Epi-LASIK (laser-assisted in situ keratomileusis)
Intra-LASIK (laser-assisted in situ keratomileusis)
PRK (photorefractive keratectomy)

Refractive Error and Choice of Refractive Procedure

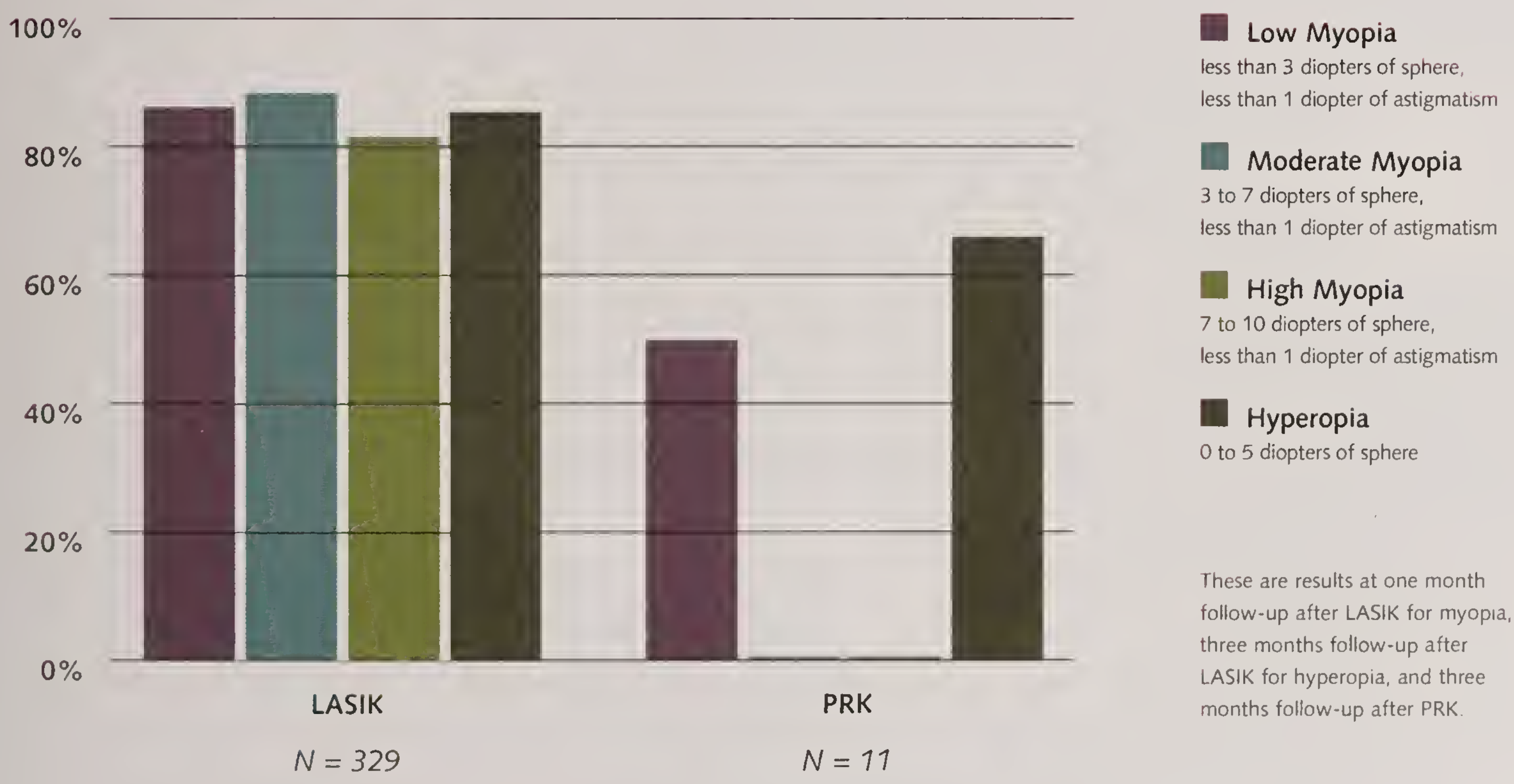


Of the 46 patients that had Epi-LASIK, 31 had low myopia and 15 had moderate myopia. Of the 283 patients treated with Intra-LASIK, 150 patients had moderate myopia and 77 had low myopia. Of the 11 patients that had PRK, eight had low myopia and three had hyperopia.

Refractive Surgery LASIK and PRK: Percentage within 0.5 diopters of target refraction

July 2008 to June 2009

Of the 329 eyes that had LASIK (laser-assisted in situ keratomileusis) surgery during the one-year study period, 86.6 percent (285/329) achieved a post-operative refraction within 0.5 diopters of their target refraction. Of the 11 eyes that had PRK (photorefractive keratectomy), 54.5 percent (6/11) achieved a post-operative refraction within 0.5 diopters of their target refraction.



Surgical Success Rates for LASIK and PRK

These are results at one month follow-up after LASIK for myopia, three months follow-up after LASIK for hyperopia, and three months follow-up after PRK.

Refractive Surgery LASIK and PRK: Retreatment rates at three months follow-up

July 2008 to June 2009

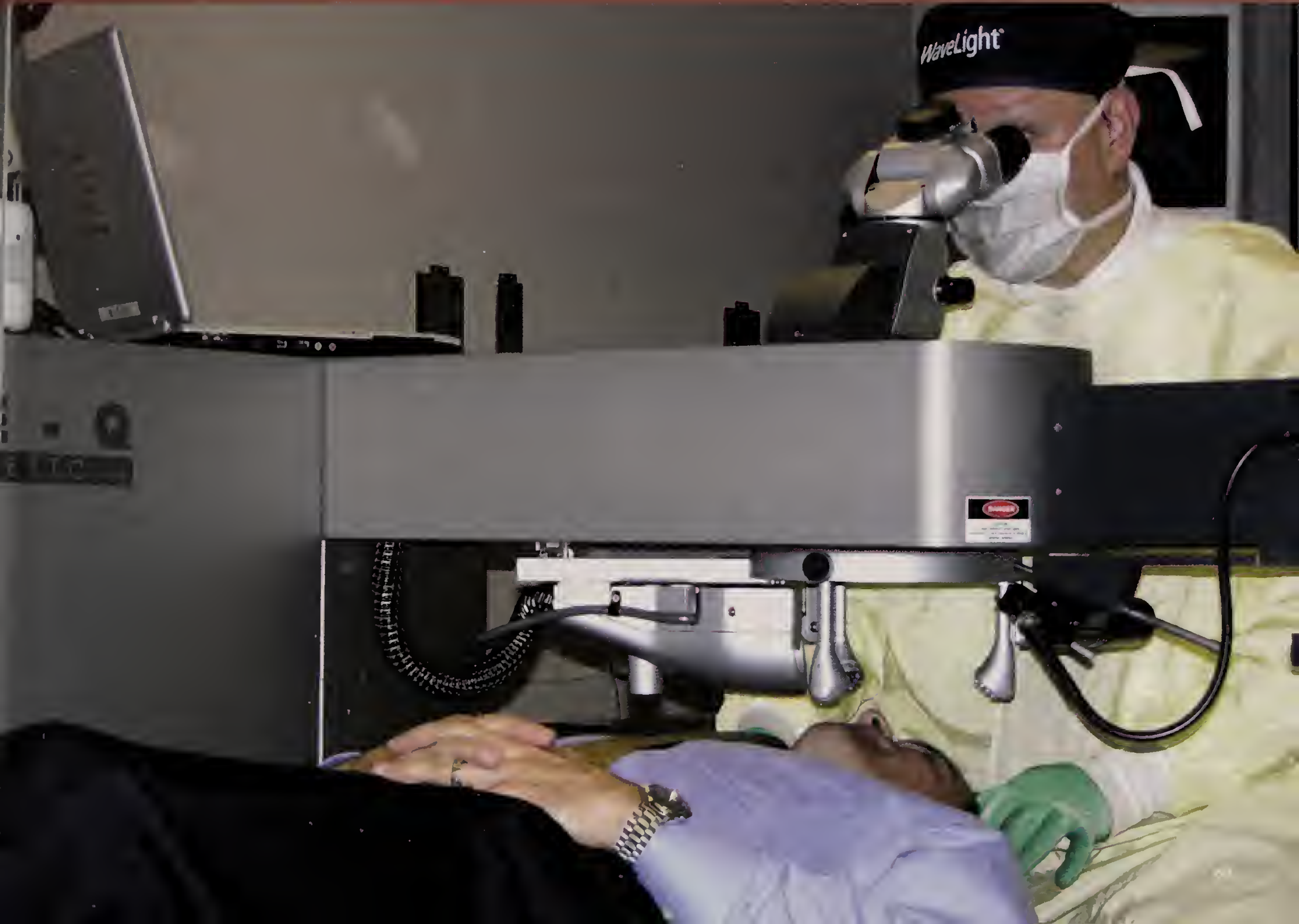
Of the 329 eyes that had LASIK (laser-assisted in situ keratomileusis) during the one-year study period, only 1.2 percent (4/329) had an enhancement/retreatment procedure within three months. Of the 11 eyes that had PRK (photorefractive keratectomy) surgery, none required an enhancement/retreatment procedure within three months.

ENHANCEMENT/RETREATMENT RATES:

LASIK (4 of 329 eyes):	1.2%
PRK (0 of 11 eyes):	0%

N = 329

Dr. Roberto Pineda performing laser vision correction surgery on a patient.



Refractive Surgery LASIK: Intra-operative complications

July 2008 to June 2009

Of the 329 eyes that had LASIK (laser-assisted in situ keratomileusis) surgery during the one-year study period, only one case had a suction break (0.3 percent). Similarly, only one case had a vertical bubble break. The final refractive error for both cases was within 0.5 diopters of the target refraction.

LASIK INTRA-OPERATIVE COMPLICATION RATES

suction break (1 of 329 eyes):	0.3%
vertical bubble break (1 of 329 eyes):	0.3%
aborted IntraLase or converted (0 of 329 eyes):	0%
major flap holes or tears (0 of 329 eyes):	0%
microkeratome complication (0 of 329 eyes):	0%

N = 329

Refractive Surgery LASIK: post-operative complications at three months follow-up

July 2008 to June 2009

Of the 329 eyes that had LASIK (laser-assisted in situ keratomileusis) surgery during the one-year study period, only two eyes developed deep lamellar keratitis (DLK). Six eyes had flap wrinkles, and three eyes developed severe dry eye symptoms.

LASIK POST-OPERATIVE COMPLICATION RATES:

DLK (2 of 329 eyes):	0.6%
infectious keratitis (0 of 329 eyes):	0%
flap wrinkle or slippage in week 1 (6 of 329 eyes):	1.8%
epithelial ingrowth (0 of 329 eyes):	0%
loss of 2 lines or more best uncorrected vision (0 of 329 eyes):	0%
severe persistent dry eye (3 of 329 eyes):	0.9%

N = 329

Refractive Surgery PRK: post-operative complications at three months follow-up

July 2008 to June 2009

Of the 11 eyes that had PRK (photorefractive keratectomy) surgery during the one-year study period, only two patients (18.2 percent) suffered from severe dry eye symptoms at last follow-up.

PRK POST-OPERATIVE COMPLICATION RATES:

retreatment/enhancement (0 of 11 eyes):	0%
haze greater than 1+ (0 of 11 eyes):	0%
loss of 2 lines or more best uncorrected vision (0 of 11 eyes):	0%
severe persistent dry eye (2 of 11 eyes):	18.2%

N = 11

Ophthalmic Plastic and Reconstructive Surgery Service

Massachusetts
Eye and Ear
Infirmary

Ophthalmic Plastic and Reconstructive Surgery Service

Director: Aaron M. Fay, MD

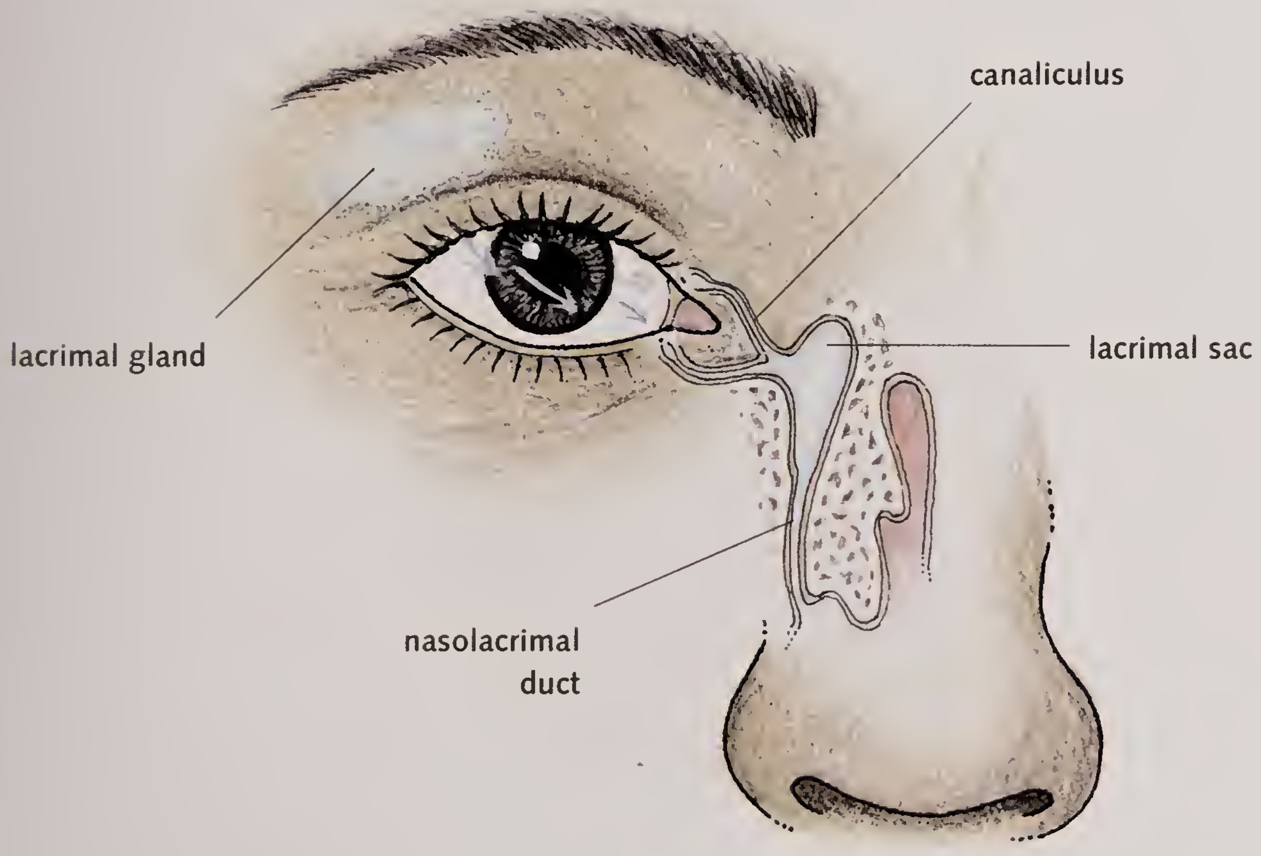
Ophthalmic plastic and orbital surgery is a unique and highly specialized discipline that combines a surgeon's technical expertise with his or her artistic skill and ability. The Ophthalmic Plastic and Reconstructive Surgery Service at Mass. Eye and Ear focuses on functional disorders of the eyelids, orbits, and lacrimal drainage system. Our Service also provides cosmetic enhancement of the eye zone (eyes, lids, upper cheeks, brow and forehead) to enhance a patient's appearance and self-esteem.

Mass. Eye and Ear's Ophthalmic Plastic and Reconstructive surgeons are board-certified and highly skilled at performing a host of delicate aesthetic and reconstructive procedures in and around the eye structure, utilizing the latest technologies. Our expertise includes reconstructive and cosmetic eyelid surgery, laser surgery, treatment of orbital tumors and inflammations (such as thyroid eye disease), removal of eyes (enucleation), and treatment for traumatic lacerations and fractures.

Select Services

- Laser dacryocystorhinostomy (DCR)
- Advanced treatment of vascular anomalies
- Official support group with the National Graves' Disease Foundation

The Lacrimal System

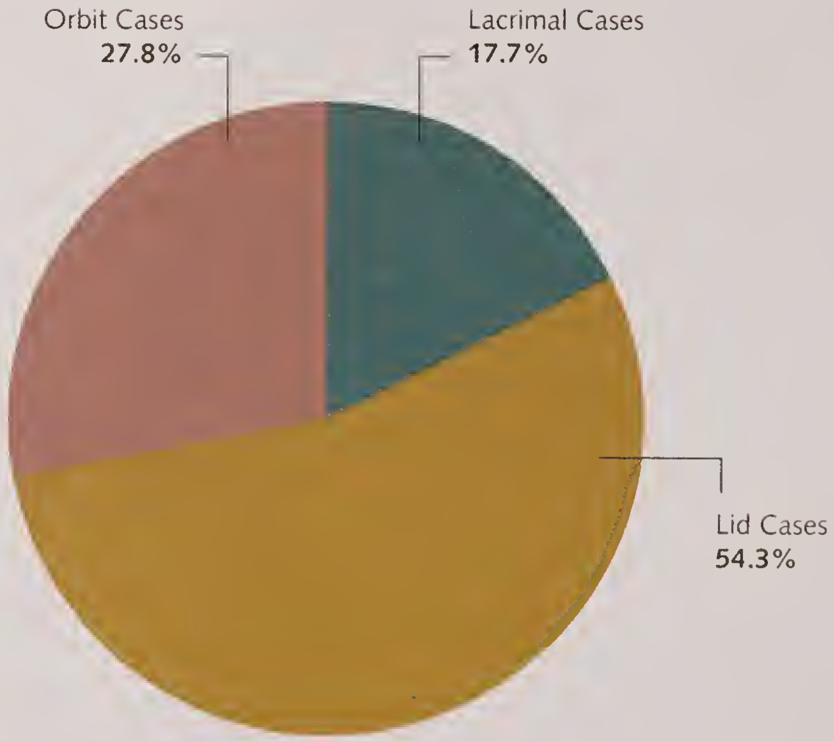

canaliculus
lacrimal gland
lacrimal sac
nasolacrimal duct

Oculoplastic Surgery: Distribution of surgery types

March 2008 to March 2009

There were 632 surgeries performed by Mass. Eye and Ear's Oculoplastic Service during a one-year period. Orbital cases primarily involved fractures or tumors and comprised 27.8 percent (176/632) of cases.

Surgery Types



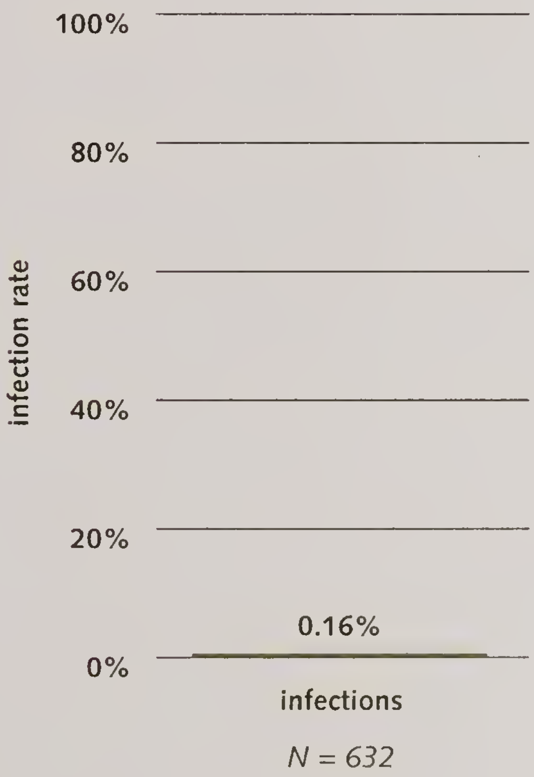
N = 632

Oculoplastic Surgery: Incidence of post-operative infection at six month follow-up

March 2008 to February 2009

This bar graph demonstrates that the incidence of post-operative infections following surgeries performed by the Mass. Eye and Ear Oculoplastic Service is rare. Only one of 632 (0.16 percent) patients developed MRSA (Methicillin resistant Staph aureus) cellulitis following resection of an orbital tumor. The infection was successfully treated without permanent ocular sequelae.

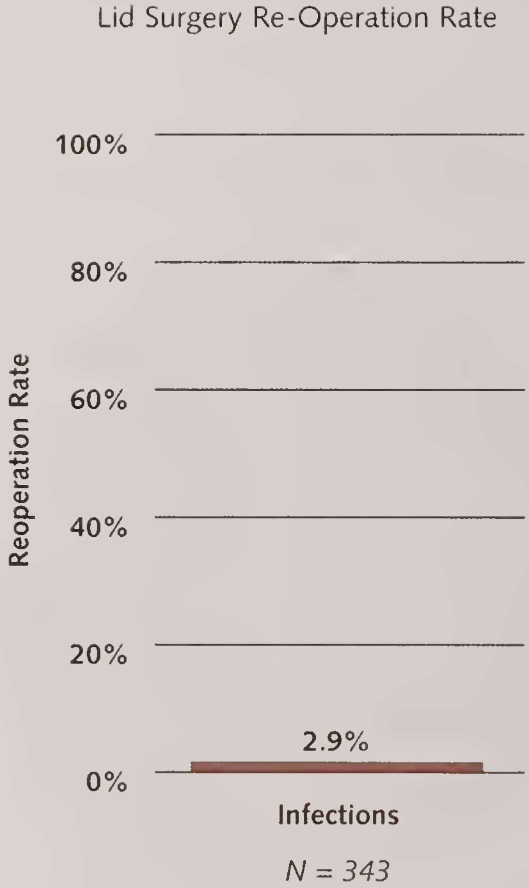
Post-Operative Infection Rate After Oculoplastic Surgery



Oculoplastic Surgery: Lid surgeries re-operation rate at six months follow-up

March 2008 to February 2009

Of the 343 eyes that had eyelid surgery, only 2.9 percent (10/343) of the eyes required a second procedure within six months in order to achieve surgical success.



Retina Service

Massachusetts
Eye and Ear
Infirmary

Retina Service

Director: Evangelos S. Gragoudas, MD

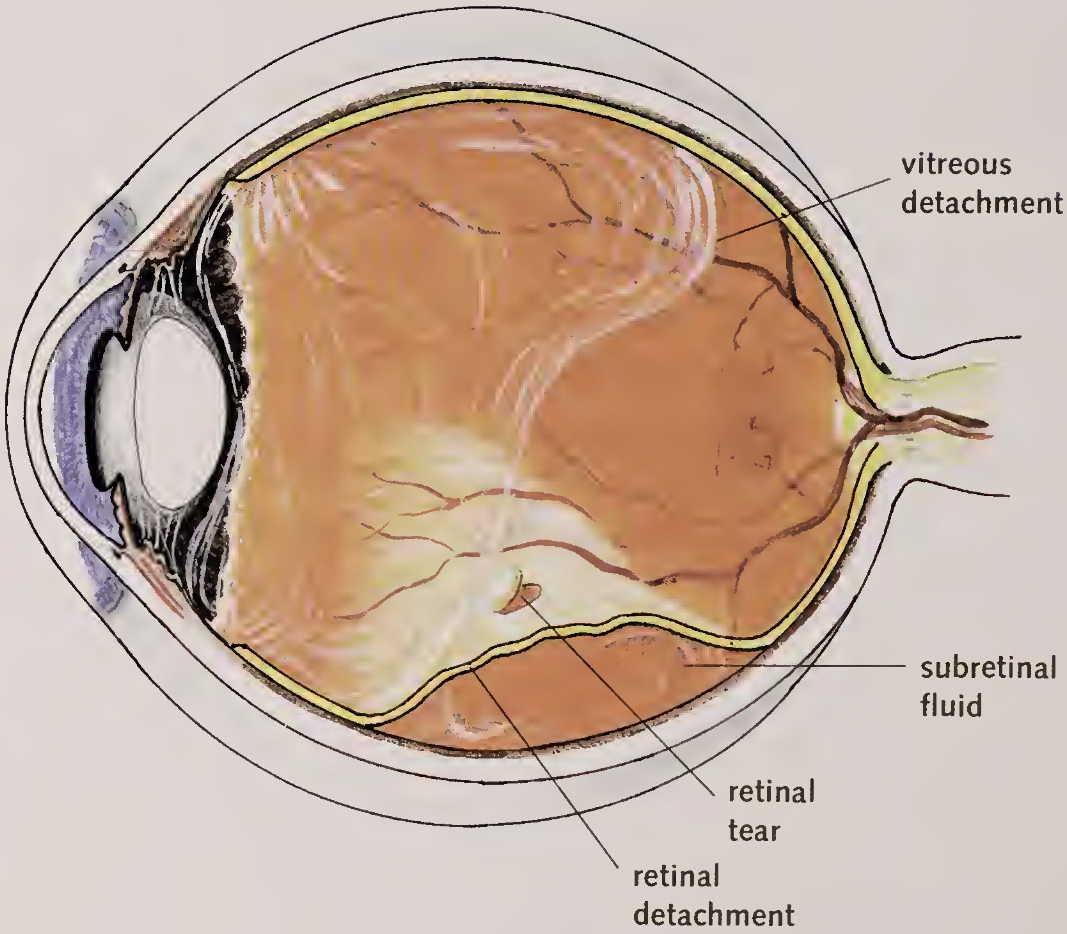
Founded in 1977, the Retina Service at Mass. Eye and Ear is one of the largest subspecialty groups of its kind in the country. The Service takes pride in a rich and renowned history of innovation and is recognized around the world for its major scientific and clinical contributions to vision science. Always on a path to discovery, our retina specialists are leaders in their field with subspecialty expertise that spans virtually all medical and surgical eye diseases affecting the vitreous, macula and retina.

We offer adults and children access to the most current treatment modalities and leverage state-of-the-art technology to provide the most comprehensive, clinical care available anywhere in the world. Our physician-scientists are highly skilled at diagnosing and treating a full range of ocular diseases, including macular degeneration, diabetic retinopathy, retinal detachments and ocular tumors. In addition to offering the most effective therapies available, we are engaged in clinical trials that give our patients the opportunity to participate in — and often benefit from — groundbreaking, sight-saving research.

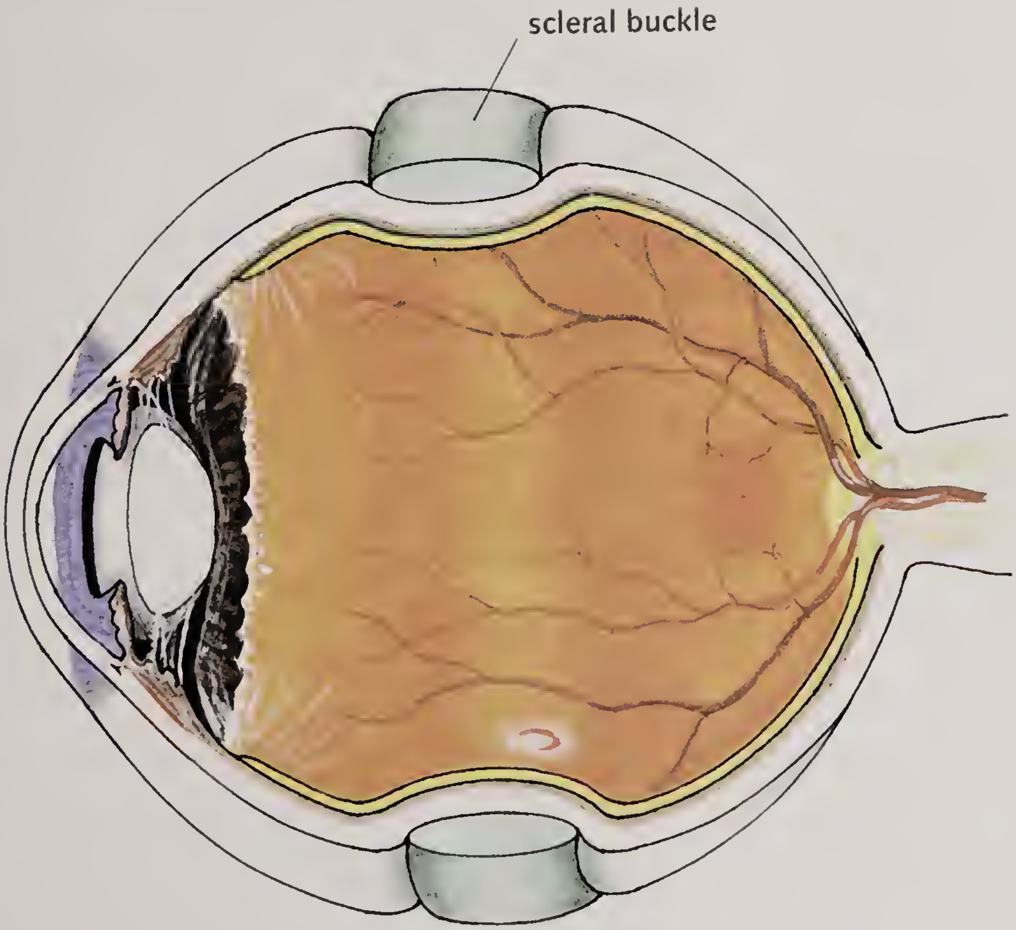
Select Resources

- Diagnostic Ultrasound System I-3 System ABD (Ellex) – for UBM, diagnostic Bscan, diagnostic axial length, and biometry Ascan
- Cirrus HD-OCT Model 4000 (Zeiss)
- Spectralis HRA and OCT/Fluorescein & ICG testing (Heidelberg)
- Heidelberg Retina Angiograph II/fluorescein, ICG & red free photos (Heidelberg)
- Panretinal angle contact lens retinal camera Model 1000 (Optimedica)
- 20 to 50 degree retinal camera Model TRC-IX (Topcon)
- Photo slit-lamp model SL-D7 (Topcon)
- Retcam 11 contact lens camera (Clarity)
- Visio Electro Diagnostic ERG machine (LKC Technologies Inc)
- Confoscan 4, Model CS4115 (Nidek)
- Stratus Optical Coherence Tomography Model 3000 (Zeiss)

Retinal Detachment


vitreous detachment
subretinal fluid
retinal tear
retinal detachment

Retinal Detachment Repair


scleral buckle

Retina Surgery: At six months follow-up

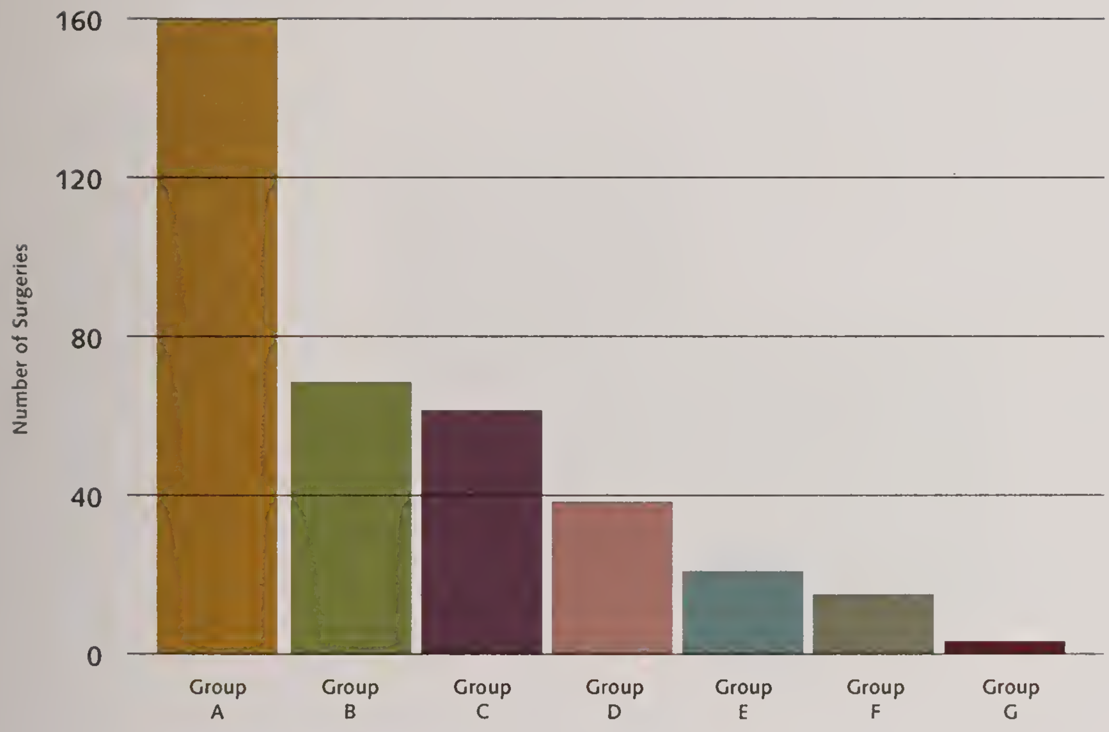
March 2008 to February 2009

Excluding lasers and intravitreal injections, 420 major surgeries were performed by the Mass. Eye and Ear Retina Service during a one-year period. Of these operations, we reviewed the outcomes of 364 patients who had six months of follow-up data. All results are described at the six month visit.

Dr. Shizuo Mukai exits the OR after surgery.

Retina Surgery: Distribution of indications for major retina surgeries

March 2008 to February 2009



Group A: Primary rhegmatogenous retinal detachment

Group B: Diabetic retinopathy (with macular edema) and diabetic vitreous hemorrhage

Group C: Epiretinal membrane

Group D: Complicated rhegmatogenous retinal detachment and giant retinal tear

Group E: Macular hole

Group F: Complicated diabetic retinopathy (with fibrovascular proliferation and/or retinal detachment)

Group G: Repair of cataract complications/dropped lens

N = 364

Retina Surgery: All retina surgeries combined, vision improvement at six months follow-up

March 2008 to February 2009

Visual improvement is defined as an improvement of vision by at least two lines. Of the 364 major operations that were analyzed, 50.8 percent (185/364) had at least two lines of vision improvement at the six month follow-up visit.

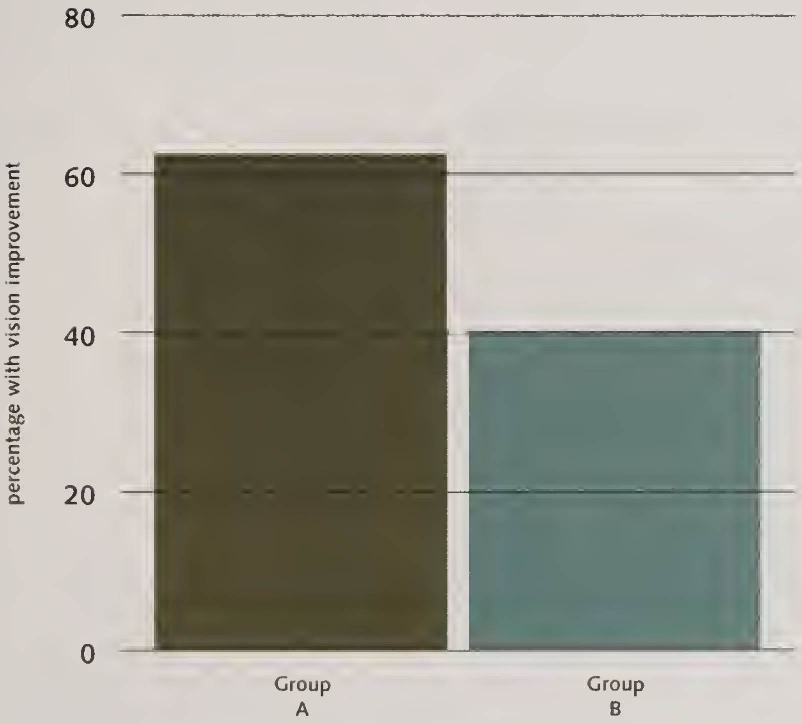
The following charts display visual improvements and complication rates for the major retina surgeries.

Retina Surgery:
Surgery for diabetic retinopathy, vision improvement at six months follow-up

March 2008 to February 2009

Visual improvement is defined as an improvement of vision by at least two lines.

The visual outcomes of the 82 eyes that had surgery for diabetes-related problems are shown below:



Group A (67 eyes): Diabetic retinopathy (with macular edema) and diabetic vitreous hemorrhage

Group B (15 eyes): Complicated diabetic retinopathy (with fibrovascular proliferation and/or retinal detachment)

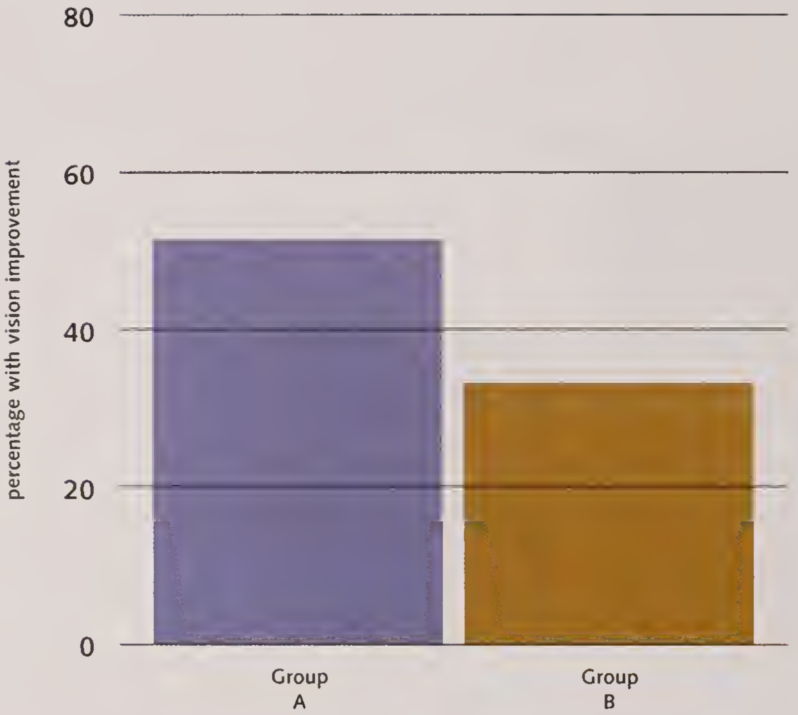
N = 82

Retina Surgery: Surgery for rhegmatogenous retinal detachment, vision improvement at six months follow-up

March 2008 to February 2009

Visual improvement is defined as an improvement of vision by at least two lines.

The visual outcomes of the 199 eyes that had surgery for rhegmatogenous retinal detachment (both macula-on and macula-off) are shown below:



Group A: Primary rhegmatogenous retinal detachment

Group B: Complicated rhegmatogenous retinal detachment and giant retinal tear

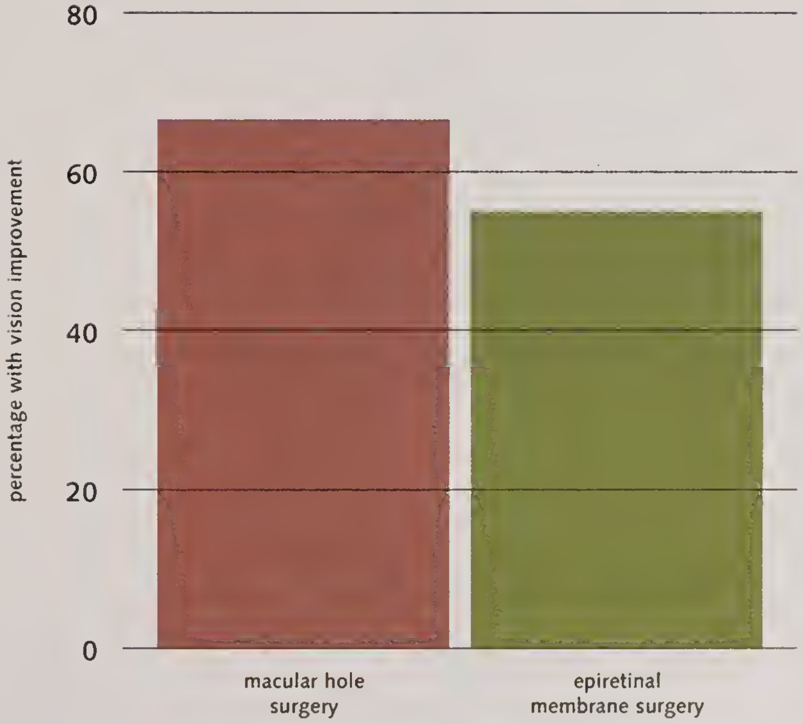
N = 199

Retina Surgery: Macula surgery, vision improvement at six months follow-up

March 2008 to February 2009

Visual improvement is defined as an improvement of vision by at least two lines.

Shown below are the visual outcomes of the 21 eyes that had macular hole surgery and the 51 eyes that had epiretinal membrane peel.



N = 21　　*N = 51*

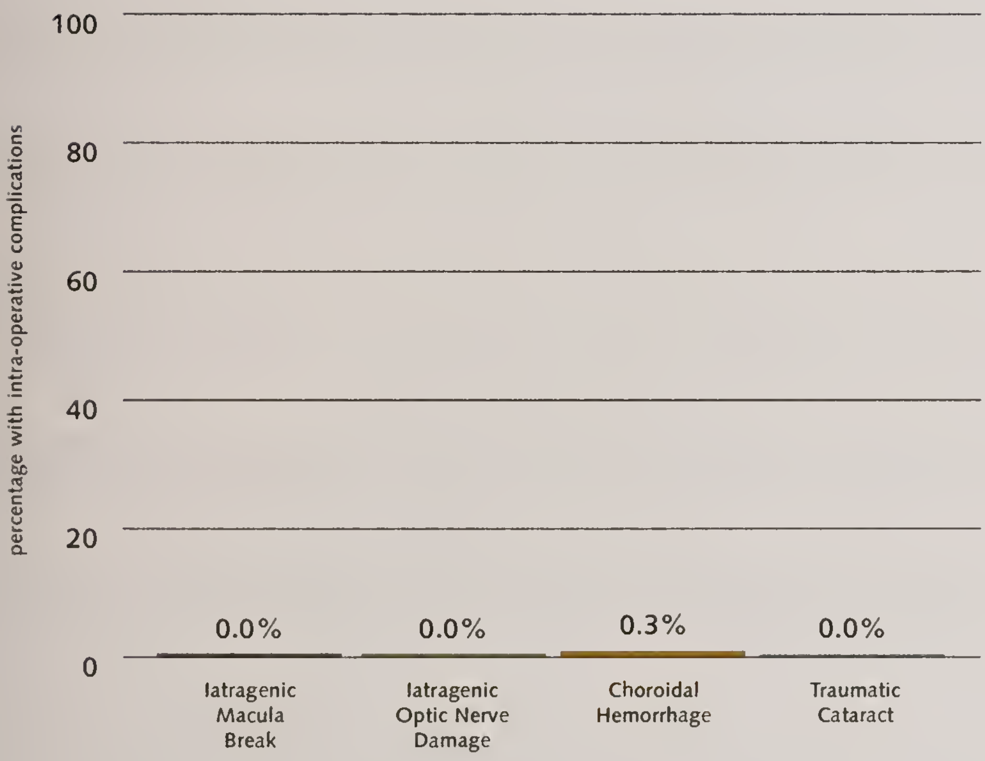
Dr. Ivana Kim speaks to a community group about age-related macular degeneration.

Retina Surgery: Intra-operative complications for all 364 major operations

March 2008 to February 2009

The following graph represents the intra-operative complications that occurred for the 364 major operations that were done by the Mass. Eye and Ear Retina Service. The following intra-operative complications were recorded:

- *Iatrogenic macula break*
- *Iatrogenic optic nerve damage*
- *choroidal hemorrhage*
- *traumatic cataract*



N = 364

Only one case (for primary rhegmatogenous retinal detachment repair) developed an intra-operative complication, choroidal hemorrhage.

Retina Surgery: Post-operative complications for all retinal surgeries (Groups A-G) at six months follow-up

March 2008 to February 2009

The information below represents the post-operative complications that occurred for the 364 retinal surgeries that were performed by the Mass. Eye and Ear Retina Service and that had six months of follow-up data.

Infection (1 of 364 eyes):	0.3%
Retinal detachment (15 of 364 eyes):	4.1%
Choroidal hemorrhage (0 of 364 eyes):	0%
Proliferative vitreoretinopathy (PVR) (17 of 364 eyes):	4.7%
Persistent intraocular pressure greater than 30 mmHg (glaucoma)(0 of 364 eyes):	0%
Hypotony (0 of 364 eyes):	0%
New retinal breaks (iatrogenic)(3 of 364 eyes):	0.8%
Persistent corneal epitheliopathy/ other corneal pathology (2 of 364 eyes):	0.5%
Vitreous hemorrhage (29 of 364 eyes):	8.0%
Development/recurrence of macular pucker or epiretinal membrane (50 of 364 eyes):	13.7%
Silicone oil emulsification (1 of 364 eyes):	0.3%
Macular hole (3 of 364 eyes):	0.8%
Visually significant cataract (15 of 364 eyes):	4.1%

For all groups, the most common post-operative complication was development or recurrence of an **epiretinal membrane**:13.7 percent (50/364) of patients.

The second most common complication was **vitreous hemorrhage**: 8.0 percent (29/364) of patients. Of the patients who developed a post-operative vitreous hemorrhage (VH), 82.7 percent (24/29) were diabetics. Of the 24 patients who developed a post-operative VH, 17 were from group B (diabetic retinopathy, diabetic vitreous hemorrhage) and seven were from group F (complicated diabetic retinopathy).

Proliferative vitreoretinopathy (PVR) developed in 4.7 percent (17/364) of patients. All 17 eyes with this complication were having surgery for rhegmatogenous retinal detachment.

Nine of these patients (52.9 percent) were from group D (complicated rhegmatogenous retinal detachment). The remaining eight (47.1 percent) were from group A (primary rhegmatogenous retinal detachment).

A **visually significant** cataract developed in 4.1 percent (15/364) of patients, such that subsequent cataract surgery was performed. However, this is not necessarily considered a surgical complication resulting from surgeon error since cataract development is a well known side effect of retinal surgeries in general.

Infection developed in 0.3 percent (1/364) of patients.

Group A: Primary rhegmatogenous retinal detachment

Group B: Diabetic retinopathy (with macular edema) and diabetic vitreous hemorrhage

Group C: Epiretinal membrane

Group D: Complicated rhegmatogenous retinal detachment and giant retinal tear

Group E: Macular hole

Group F: Complicated diabetic retinopathy (with fibrovascular proliferation and/or retinal detachment)

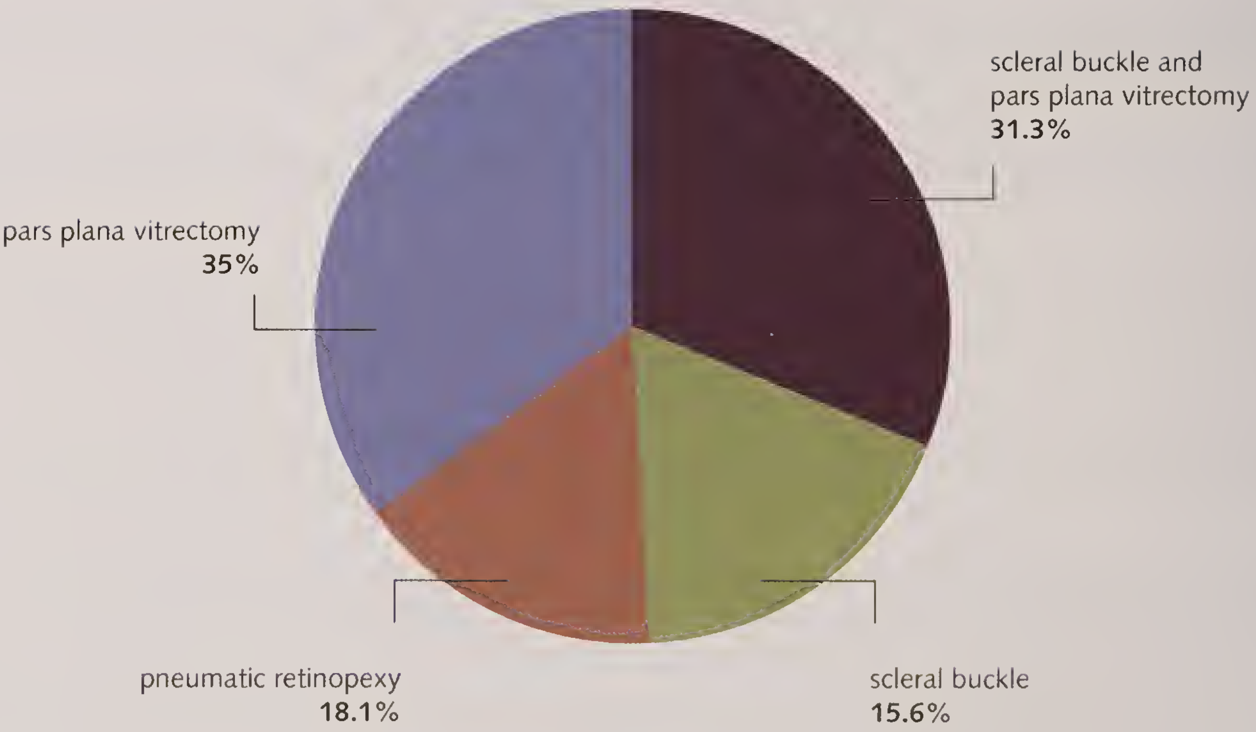
Group G: Repair of cataract complications/ dropped lens

Retina Surgery: Choice of initial surgery performed for primary rhegmatogenous retinal detachment

March 2008 to February 2009

Primary rhegmatogenous retinal detachment (RD) was the most common retinal condition (43.9 percent or 160/364) that occurred in patients treated by the Mass. Eye and Ear Retina Service.

This pie chart demonstrates the initial surgical procedure performed for primary rhegmatogenous RD.



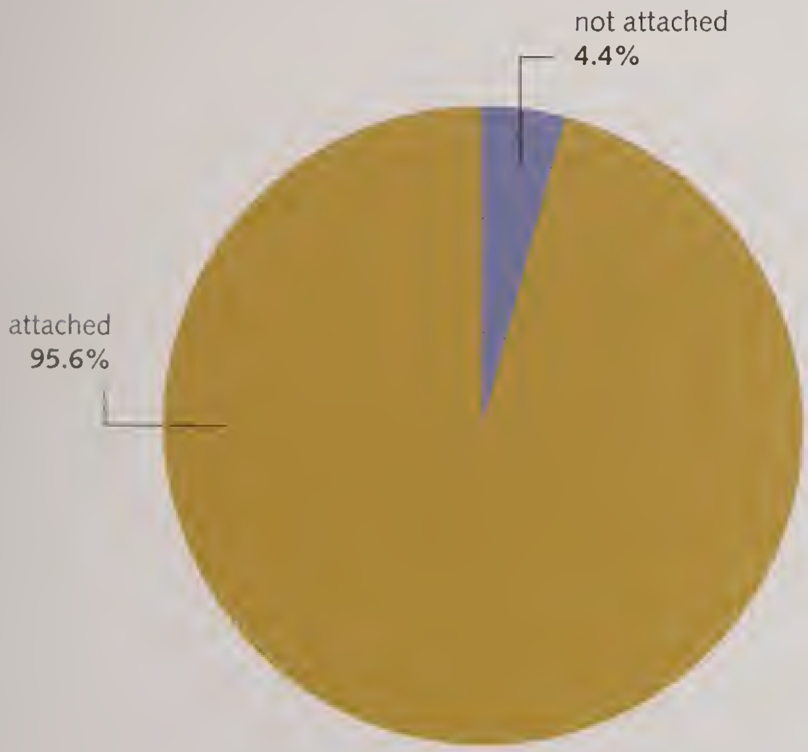
N = 160

Retina Surgery: Final retinal reattachment rate at six months for primary rhegmatogenous retinal detachment

March 2008 to February 2009

Primary rhegmatogenous retinal detachment was the most common retinal condition (43.9 percent or 160/364) that occurred in patients treated by the Mass. Eye and Ear Retina Service.

Over 95% of rhegmatogenous retinal detachment patients achieved surgical success.



The Mass. Eye and Ear retina surgeons were successful in reattaching the retina in 95.6% (153/160) of cases using one or more procedures, which may have included pars plana vitrectomy, scleral buckle surgery, and/or pneumatic retinopexy.

N = 160

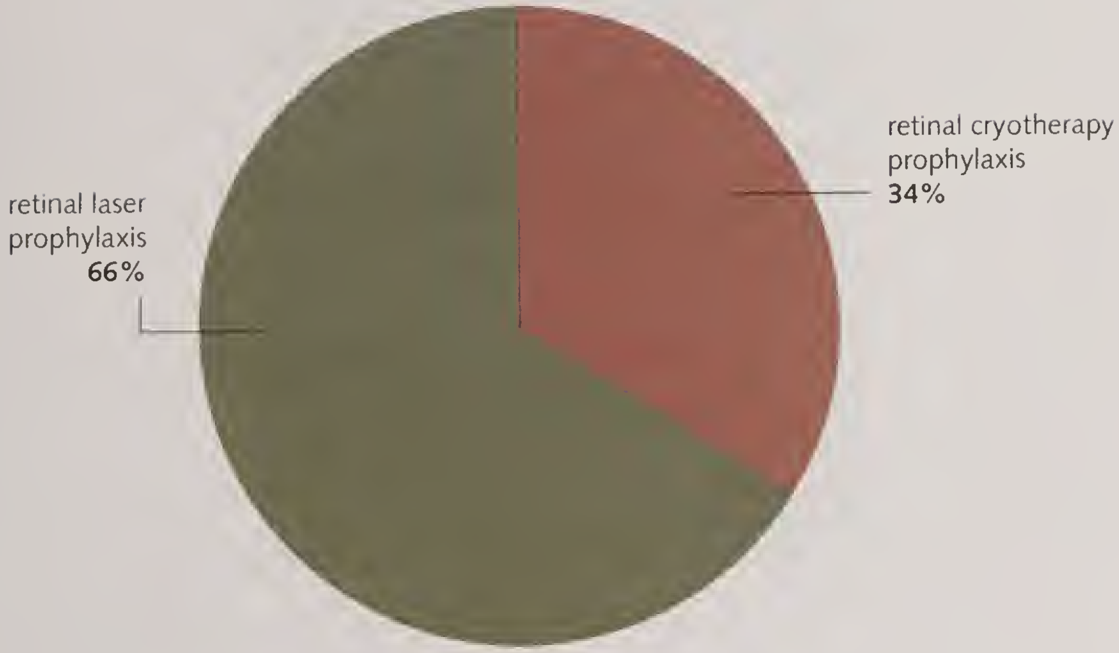
Dr. Lucy Young examines a patient's retina during surgery.

Retina Surgery: Retinopexy; distribution of prophylactic treatment types

January 2008 to February 2009

This pie chart depicts the 77 eyes that were treated for retinal tears or breaks in order to prevent retinal detachment. Sixty-six percent of eyes (51/77) were treated with laser prophylaxis, and 34 percent of eyes (26/77) were treated with cryotherapy prophylaxis.

Distribution of Treatments for Retinal Tears or Breaks



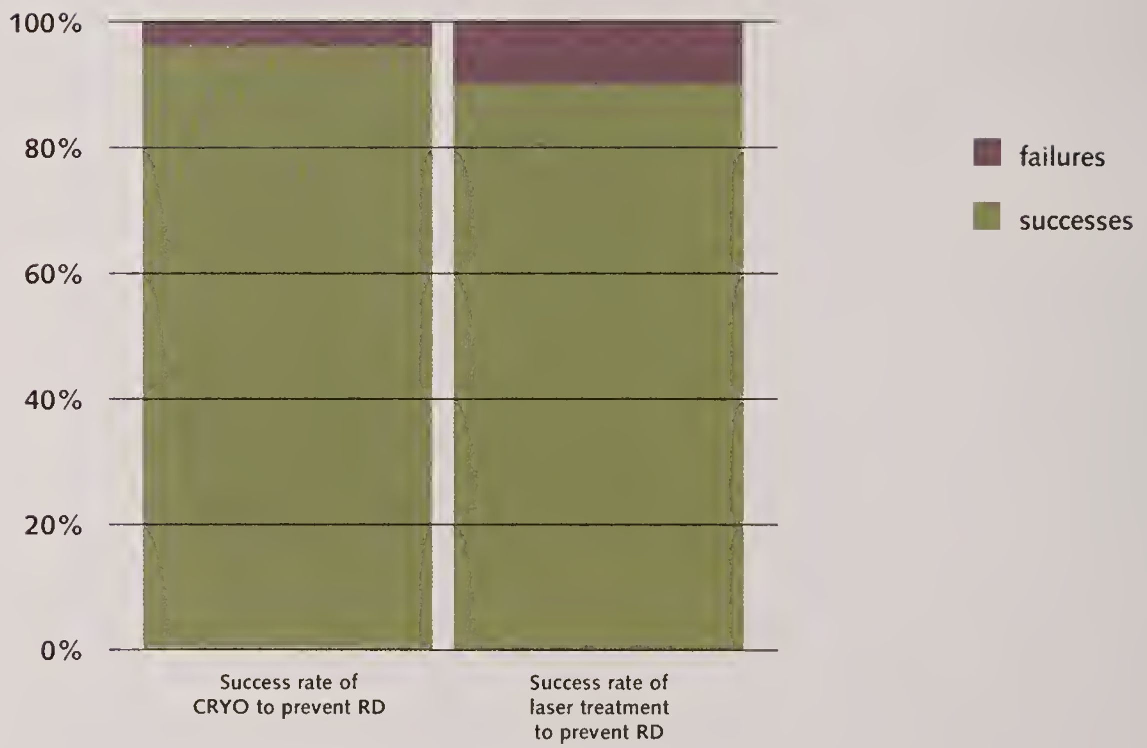
N = 77

Retina Surgery: Retinopexy; success rates at six months for prevention of retinal detachment (RD)

January 2008 to February 2009

Of the 71 eyes with six months of follow-up data, cryotherapy (CRYO) achieved a 96 percent success rate (25/26 eyes), and laser treatment achieved a 90 percent success rate (46/51 eyes).

Success Rates for RD Prevention



N = 71

Retina Surgery: Intravitreal injections infection rate

July 2006 to June 2009

Complete success is defined as a zero percent infection rate per year. Benchmark for intravitreal infection rates is 0.02% to 1.9%.

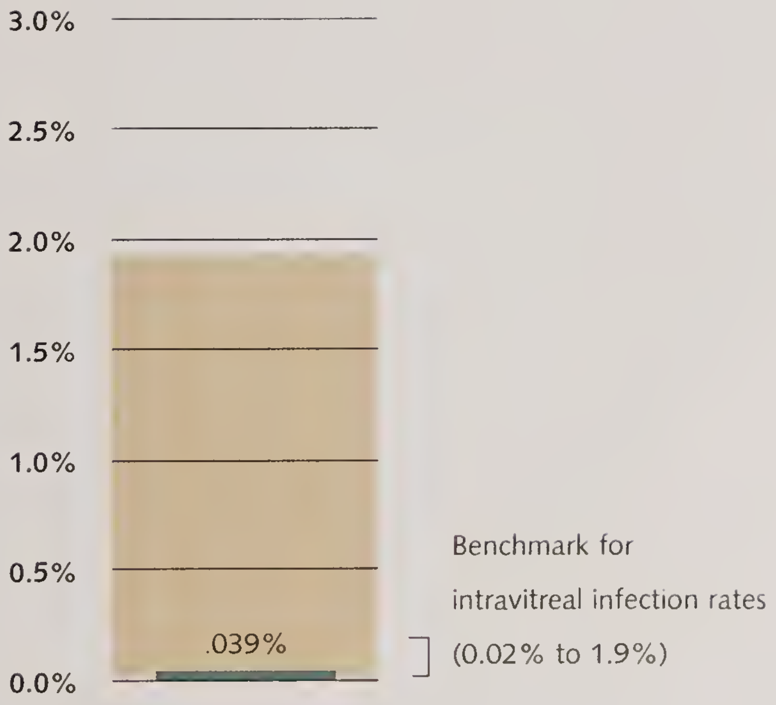
Mass. Eye and Ear intravitreal injection infection rate over three years: 0.039%

In order to identify cases of acute endophthalmitis, a retrospective review was performed of all consecutive eyes that underwent intravitreal injections from July 1, 2006 to June 30, 2009. During the 36-month study interval, 5,067 intravitreal injections were performed.

The overall incidence rate of endophthalmitis subsequent to intravitreal injection was 0.039% (two of 5,067 eyes). In one case of acute endophthalmitis, the patient presented three days after the injection. Bacterial cultures revealed coagulase-negative Staphylococcus species. Treatment of the infection resulted in a best corrected visual acuity at 19 month follow-up of 20/25 (baseline 20/30). In the second case, the patient presented four days after injection. Gram stain showed moderate bacteria but cultures were negative. After treatment, best corrected visual acuity at two years follow up was 20/50 -1 (baseline 20/32-2).

In conclusion, acute endophthalmitis is a rare potential complication of intravitreal injections.

Reference for Benchmark: Bhavsar et al. Risk of Endophthalmitis After Intravitreal Drug Injection When Topical Antibiotics Are Not Required. Arch Ophthalmol 2009;127(12):1581-1583.



N = 5,067

Retina Testing:
FA and ICG
Adverse drug reactions

October 2008 to September 2009

Adverse drug reactions to fluorescein angiography (FA) and indocyanine green (ING) tests are described below.

TEST	NUMBER OF TESTS PERFORMED	ADVERSE REACTIONS
FA	1,605	16
ICG	109	0

REACTION REPORTED	# OF PATIENTS	PERCENTAGE
itching and hives	8	50
itching	6	37.5
burning sensation in arm, dizziness, nausea	1	6.25
chills and muscle/back aches	1	6.25

Lois Hart performing an optical coherence tomography scan of a patient's retina.

HEIDELBERG ENGINEERING
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A

Ophthalmic Oncology

Massachusetts
Eye and Ear
Infirmary

Ophthalmic Oncology

Tumors can arise in almost any part of the eye. Some eye tumors can be quite serious, while others require no treatment. Ophthalmologists at Mass. Eye and Ear are highly experienced at treating many different types of eye tumors. Some of the specialty areas that we have developed include:

Ocular Surface Tumors

Tumors may occur on the surface of the eye due to overexposure to the sun and other causes.

Orbital Tumors and Inflammation

The orbit is comprised of the bones of the eye socket, the eyeball, the eye muscles, the optic nerve, and the surrounding fat. Any of these structures may form a tumor in adults and children.

Retinoblastoma

Tumors of the retina, in the back of the eye, are uncommon and are mostly found in young children, although they can develop at any age.

Uveal Melanoma

Melanoma of the uveal tract is the most common intraocular primary tumor and is a serious condition that requires careful diagnosis and follow-up. The data that follow focus on the treatment of this form of ocular cancer.

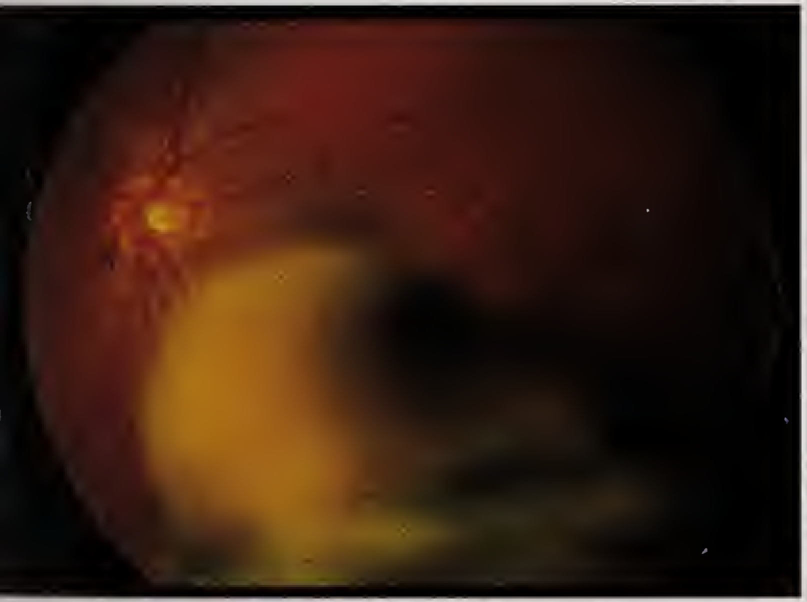
Proton Beam Irradiation: (35 years of experience) Results from the Uveal Melanoma Registry (3,000+ patients)

Select clinical outcomes representing more than 3,000 uveal melanoma patients are presented here.

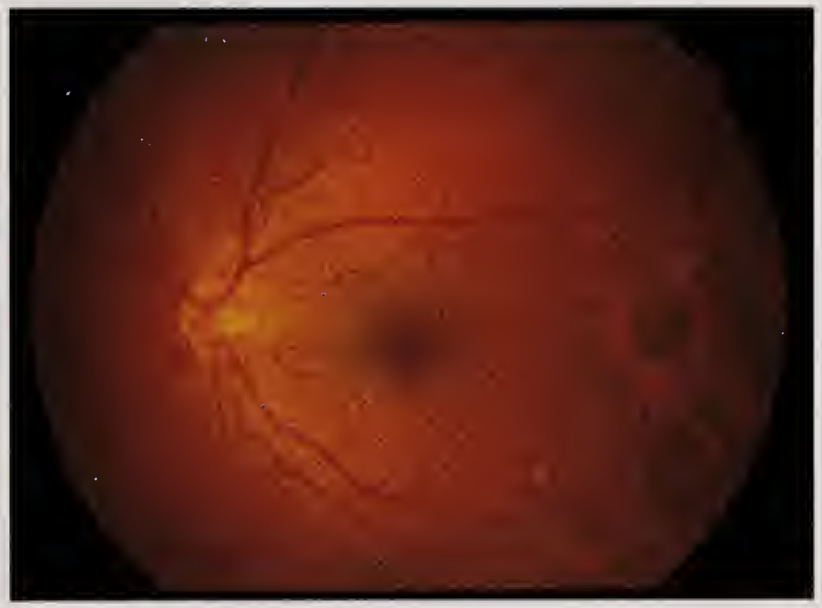
Tumors located within the eye can be challenging to diagnose and treat effectively without causing damage to the eye and loss of vision. The Mass. Eye and Ear's Ophthalmic Oncology Service, under the direction of Evangelos Gragoudas, MD, is a national and international referral center for the diagnosis and treatment of eye neoplasms. Proton beam irradiation was developed at Mass. Eye and Ear in conjunction with scientists at Harvard's High Energy Physics Department and a team of radiotherapists from Massachusetts General Hospital. In1975, the first proton beam irradiation treatment was administered at Mass. Eye and Ear to a patient with intraocular malignant melanoma. Since then, more than 3,000 patients with eye melanoma have been treated according to established standardized protocols for evaluation, treatment, and follow-up. Today, proton beam irradiation is one of the most common and effective therapies for treating intraocular tumors without causing additional vision loss. Mass. Eye and Ear's physician-scientists direct their on-going research efforts toward novel methods of diagnosis and additional therapeutic approaches.

The Uveal Melanoma Registry, a population-based registry for ocular melanomas, was established at Mass. Eye and Ear in the early 1980s.The registry contains detailed demographic, clinical and therapeutic data on most patients who have been treated by proton beam irradiation. A serum, plasma and DNA archive was added to the registry in the mid-nineties and houses specimens from more than 1,600-plus patients with uveal melanoma. This information is used as a resource for biomarker and genetic research and has enabled Mass. Eye and Ear researchers to conduct several studies of cancer susceptibility genes and biomarkers.

Photos courtesy Evangelos S. Gragoudas, MD



before proton therapy



after proton therapy

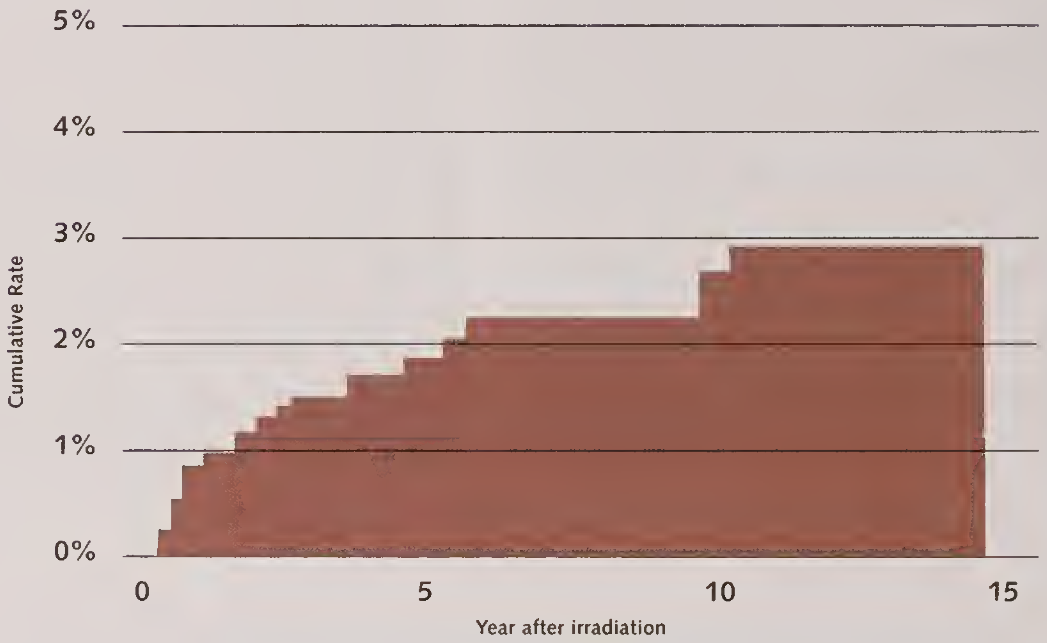
Reference: Gragoudas ES. Proton beam irradiation of uveal melanomas: the first 30 years: The Weisenfeld Lecture. Investigative Ophthalmology and Visual Science 2006; 47: 4666-4673.

Proton Beam Irradiation: Cumulative rates of local recurrence of malignant melanoma following irradiation

35 years of experience, 3,000+ patients

Long-term follow-up after radiation therapy revealed 60 cases of recurrence (2.9%), of which 45 cases were documented and 15 cases were suspect. The earliest time of recurrence was 5.2 months and the latest 10.5 years. Registry data includes follow-up periods that are well over 10 years.

Proton beam irradiation is the most succesful radiotherapeutic modality with local control of 97% of treated cases.



Reference: Gragoudas ES. Proton beam irradiation of uveal melanomas: the first 30 years: The Weisenfeld Lecture. Investigative Ophthalmology and Visual Science 2006; 47: 4666-4673.

Proton Beam Irradiation: Cumulative mortality rates of metastatic melanoma

35 years of experience, 3,000+ patients

Survival rates after diagnosis of metastasis are poor at 20 percent at one year and six percent at two years. Of the 2069 patients evaluated in this study, 408 (about 20 percent) died (range: three months to 16 years post-therapy).

Cumulative Mortality Rates of Metastatic Melanoma

YEAR POST-RX	ALL CAUSES	METASTIC MELANOMA
5	21%	14%
10	36%	23%
15	48%	27%

"All causes" of death (column 2) in the melanoma patients include accidents, heart attacks, strokes, etc. "Metastic melanoma" death rate (column 3) refers to the percentage of patients that died from uveal melanoma metastases. Liver metastases were noted in 89 percent of the 408 patients. Registry data includes follow-up periods that are well over 10 years.

Reference: Gragoudas ES. Proton beam irradiation of uveal melanomas: the first 30 years: The Weisenfeld Lecture. Investigative Ophthalmology and Visual Science 2006; 47: 4666-4673.

Proton Beam Irradiation: Cumulative rates of vision loss after irradiation of malignant melanoma

35 years of experience, 3,000+ patients

Vision loss (exceeding 20/200) can occur over time. This table shows the percentage of patients who had best corrected visual acuity (BCVA) of 20/100 or better over time. Fourteen percent of patients presented with visual acuity worse than 20/100 in the affected eye.

Cumulative Rates of Vision Loss After Irradiation of Malignant Melanoma

YEAR POST-RX	PERCENT	95% CI
5	52%	50-55
10	65%	62-68
15	71%	66-75

Poor vision was associated with retinal detachment or tumor encroaching on the macula or disc. Eighty-eight percent of patients had visual deterioration to hand motions (HM) or worse by 10 years post-therapy. Registry data includes follow-up periods that are well over 10 years.

Reference: Gragoudas ES. Proton beam irradiation of uveal melanomas: the first 30 years: The Weisenfeld Lecture. Investigative Ophthalmology and Visual Science 2006; 47: 4666-4673.

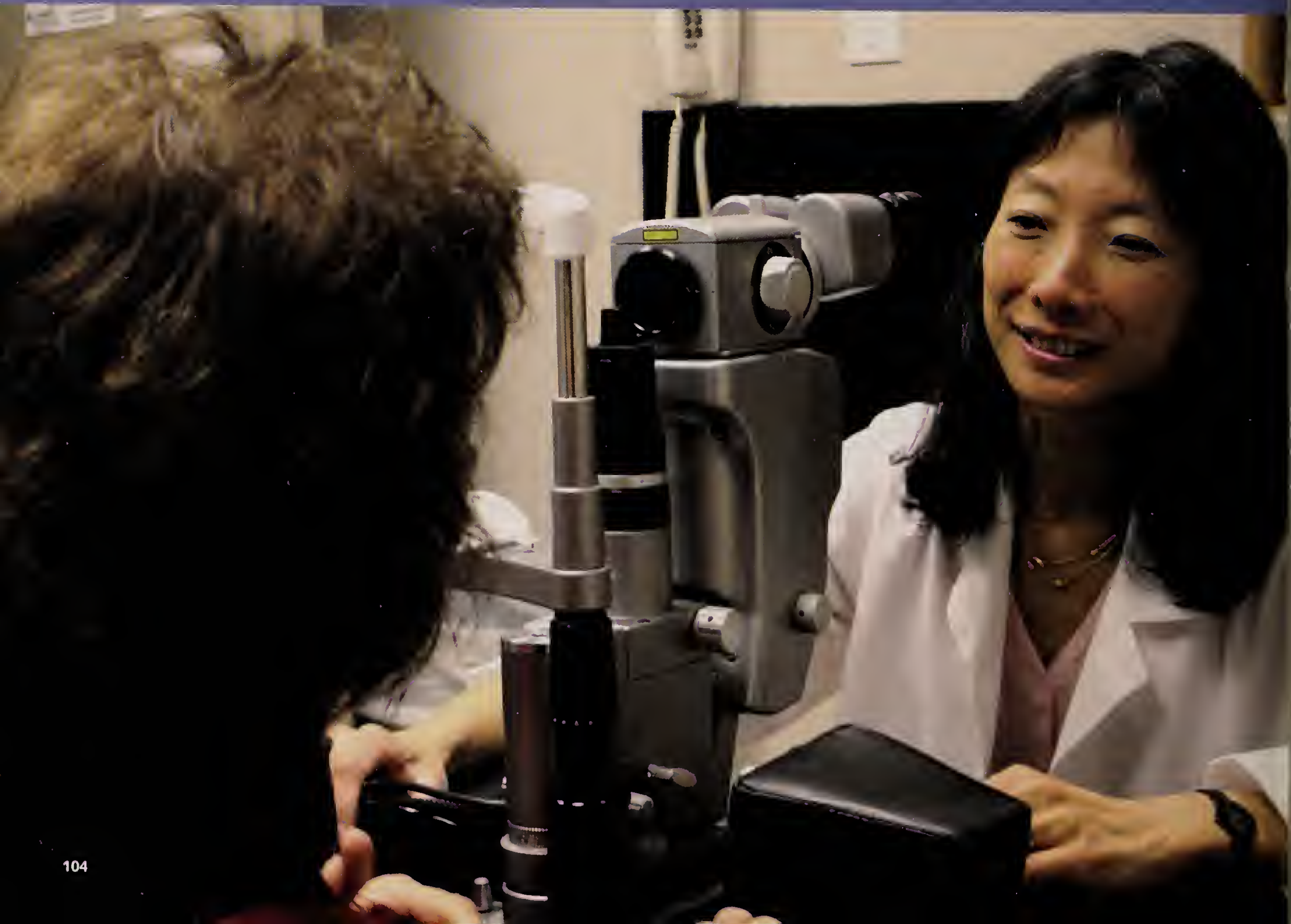
Proton Beam Irradiation: Summary of results; proton beam irradiation for malignant melanoma

35 years of experience, 3,000+ patients

Results from the Uveal Melanoma Registry

- **4.2%** of patients experienced tumor re-growth at 10 years post-irradiation
- **23%** of patients died from metastasis at 10 years post-irradiation
- **34%** of patients retained visual acuity of 20/200 or better at 10 years post-irradiation
- **<10%** of patients underwent enucleation

Dr. Lucy Young examines a patient.



Retinal Degenerations/ Electroretinography (ERG) Service

Massachusetts
Eye and Ear
Infirmary

Retinal Degenerations/ Electroretinography (ERG) Service

Director: Eliot L. Berson, MD

The Electroretinography (ERG) Service performs evaluations of patients with retinal disease who are referred for diagnosis, prognosis, genetic counseling, and treatment. Approximately 50% of the patients evaluated in the Service have retinitis pigmentosa and are being treated with vitamin A palmitate 15,000 IU/day and an oily fish diet. Many others have allied night blinding disorders or juvenile hereditary macular degeneration.

Approximately 800 patients are seen per year. The Service provides specialized measures of retinal function and performs, on average, 4,200 tests per year including full-field and focal ERGs as well as measures of dark adaptation threshold, color vision, and letter recognition macular perimetry. The macula is also evaluated with optical coherence tomography (OCT) in selected cases. Because the majority of patients with retinitis pigmentosa have non-detectable ERGs with conventional testing by young adulthood, the Service uses computer averaging with narrow band-pass filtering, which has extended the range of detectability of cone ERGs almost 100-fold, thereby, making it possible to follow the disease through almost its entire course. A cone ERG actuarial table derived from 6,500 patient visits over the past 35 years is used to estimate long-term visual prognoses for patients with typical retinitis pigmentosa. Where applicable, visual aids are prescribed, including the ITT Night Vision pocketscope, which allows night-blind patients to achieve their best daylight vision under conditions of dim illumination.

The Service provides training to residents, fellow, and medical students in the use of specialized measures of retinal function in the assessment of retinal disease.

Select Resources

- Full field electroretinogram (ERG)
- Focal ERG
- Ishihara color plates
- Farnsworth D-15 Color Test
- Farnsworth Munsell 100-Hue Color Test
- Blue Cone Monochromat Color Plates
- 2 Humphrey Field Analyzers (Zeiss)
- Letter Recognition Macular Perimetry Test
- Stratus Optical Coherence Tomography Model 3000 (Zeiss)
- CR6-45NM non-mydriatic retinal camera (Canon)
- Goldmann-Weekers Dark Adaptometer (Haag-Streit)
- 2 Goldmann Visual Field Perimeters (Goldmann)
- 2 Potential Acuity Meters (Mentor)

Retinal Degenerations/ Electroretinography (ERG) Service: Electroretinogram testing

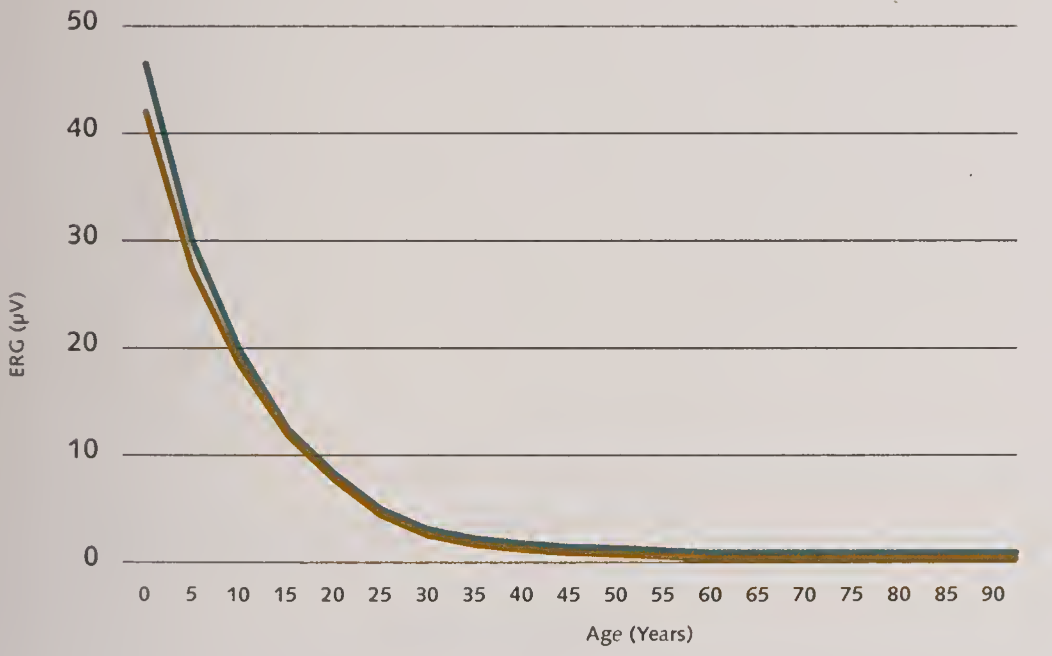
October 2008 to September 2009

The ERG is a light-evoked response recorded with a specialized contact lens that provides a measure of the electrical activity of the retina. The amplitude of the ERG is related to the number of remaining photoreceptors.

Number of ERG Service outpatient visits:	886
Number of ERGS (ERG and Retina Service)	898
Number of associated additional procedures:	3,569

Electroretinogram (ERG) Testing
Rate of decline of ERG function for patients with typical retinitis pigmentosa

The illustrated curve, based on cone ERG amplitudes recorded from 1,039 patients followed for three to 29 years, shows that an exponential function sufficiently describes the rate of decline among patients representing all genetic types combined.



30Hz Cone ERG Amplitude (µV) by Age for Patients with Retinitis Pigmentosa

1039 Patients (Ages 2-71 years at first visit)
6,553 Visits (3-29 years of follow-up)
baseline 30Hz cone ERG ≥ 0.68 µV

dominant 26%
recessive 19%
X-linked 8%
isolate 38%
undetermined 9%

Reference: From Berson EL, Long-term visual prognosis in patients with retinitis pigmentosa: the Ludwig von Sallmann lecture. Experimental Eye Research 2007; 85:7-14

N = 6,553 patient visits

Electroretinogram (ERG) Testing

Cone ERG actuarial table for patients with retinitis pigmentosa to estimate average long-term visual prognoses based on 30-Hz cone ERG amplitude at a single visit.

Table legend: Expected # of years for a patient with a given 30-Hz cone ERG at the initial visit to decline to 0.05μV.

Evidence has been obtained that the half time for loss of remaining cone ERG amplitude (as a measure of retinal degeneration) is, on average, about seven years without treatment and 8.5 years with vitamin A treatment for patients with typical retinitis pigmentosa. Patients who wish to have an estimate of their long-term visual prognosis come to the ERG Service at Mass. Eye and Ear for computerized cone ERG testing, preferably for three or four visits at two-year intervals to quantitate their rate of decline. The cone ERG actuarial table below illustrates the estimated number of additional years to decline to 0.05 μV (i.e. time to reach virtual blindness, that is, inability to walk out of a well-lighted room without assistance) without treatment (middle column) or with vitamin A treatment (right column).

30-HZ ERG (μV) (INITIAL VISIT)	NO TREATMENT (10% LOSS PER YEAR)	VITAMIN A (8.3% LOSS PER YEAR)
0.10	6.58	8.00
0.50	21.85	26.57
1.00	28.43	34.57
2.00	35.01	42.57
2.50	37.13	45.15
3.50	40.32	49.03
5.00	43.71	53.15
8.00	48.17	58.57
10.00	50.29	61.15

N = 6,553 patient visits

Example: With no treatment, a patient aged 32 with 2.0 μV at the initial visit would be expected, on average, to reach 0.05 μV in 35 years and retain useful vision until age 67 (i.e. 32 + 35). With vitamin A treatment, this patient would be expected, on average, to reach 0.05 μV in 42.5 years and retain useful vision until age 74.5 (i.e. 32 + 42.5).

Because the majority of patients with retinitis pigmentosa have non-detectable ERGs with conventional testing (i.e. <10 μV, lower norm = 50 μV) by young adulthood, the Service uses computer averaging with narrow band-pass filtering, which has extended the range of detectability of cone ERGs almost 100-fold, thereby, making it possible to follow the disease through almost its entire course.

One of our patients had been told she would be blind by age 35 and should learn Braille. With computer averaging and narrow band filtering, she had easily detectable ERGs large enough to estimate that she would retain useful vision into later life. She has returned for several visits that have confirmed that her rate of decline conforms with the prediction in the cone ERG actuarial table.

Reference: Berson EL. Long-term visual prognosis in patients with retinitis pigmentosa: The Ludwig von Sallmann lecture. Experimental Eye Research 2007; 85:7-14.

Pediatric Ophthalmology and Strabismus Service

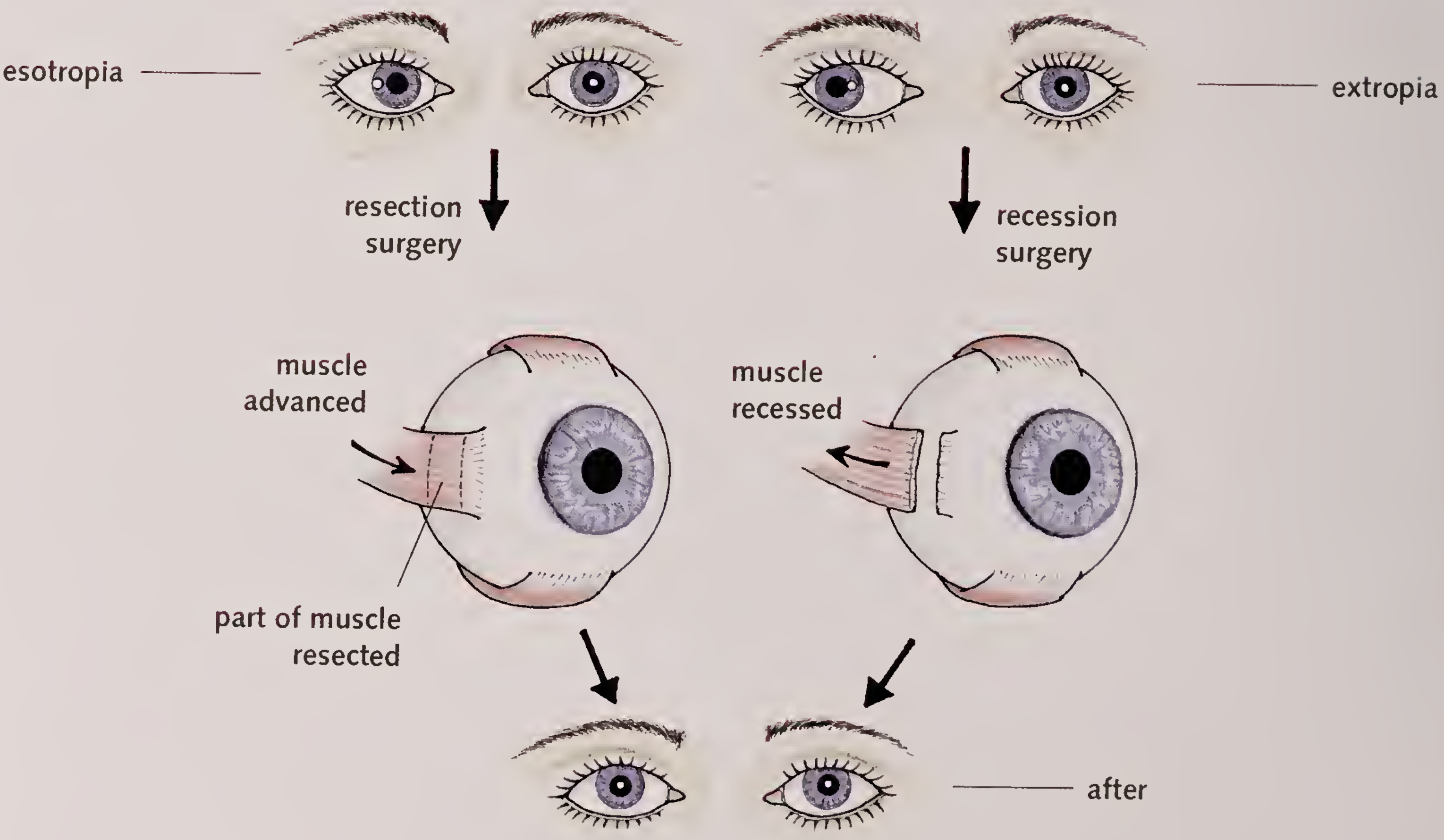
Massachusetts
Eye and Ear
Infirmary

Pediatric Ophthalmology and Strabismus Service

Director: Melanie Kazlas, MD

The Pediatric Ophthalmology and Strabismus Service is a formal partnership of the Mass. Eye and Ear and the Children's Hospital Ophthalmology Foundation (CHOF). Established in August 2009, CHOF at Mass. Eye and Ear is one of the most comprehensive pediatric ophthalmology networks in the country. Combining our pediatric forces has expanded the depth and breath of services to our patients and enabled a more integrated experience for faculty, fellows and students.

The Service provides comprehensive, primary care for the diagnosis and management of infant and child vision and common childhood vision disorders. Pediatric eye care comprises a wide range of evaluations and treatments for our patients, from screening for normal vision to caring for complex eye conditions. Our physicians treat a full range of eye disorders and diseases. Some of the more common disorders include nearsightedness, farsightedness, amblyopia (lazy eye), and childhood and adult strabismus (crossed eyes). Our pediatric experts also perform surgery to correct ocular misalignment and double vision.

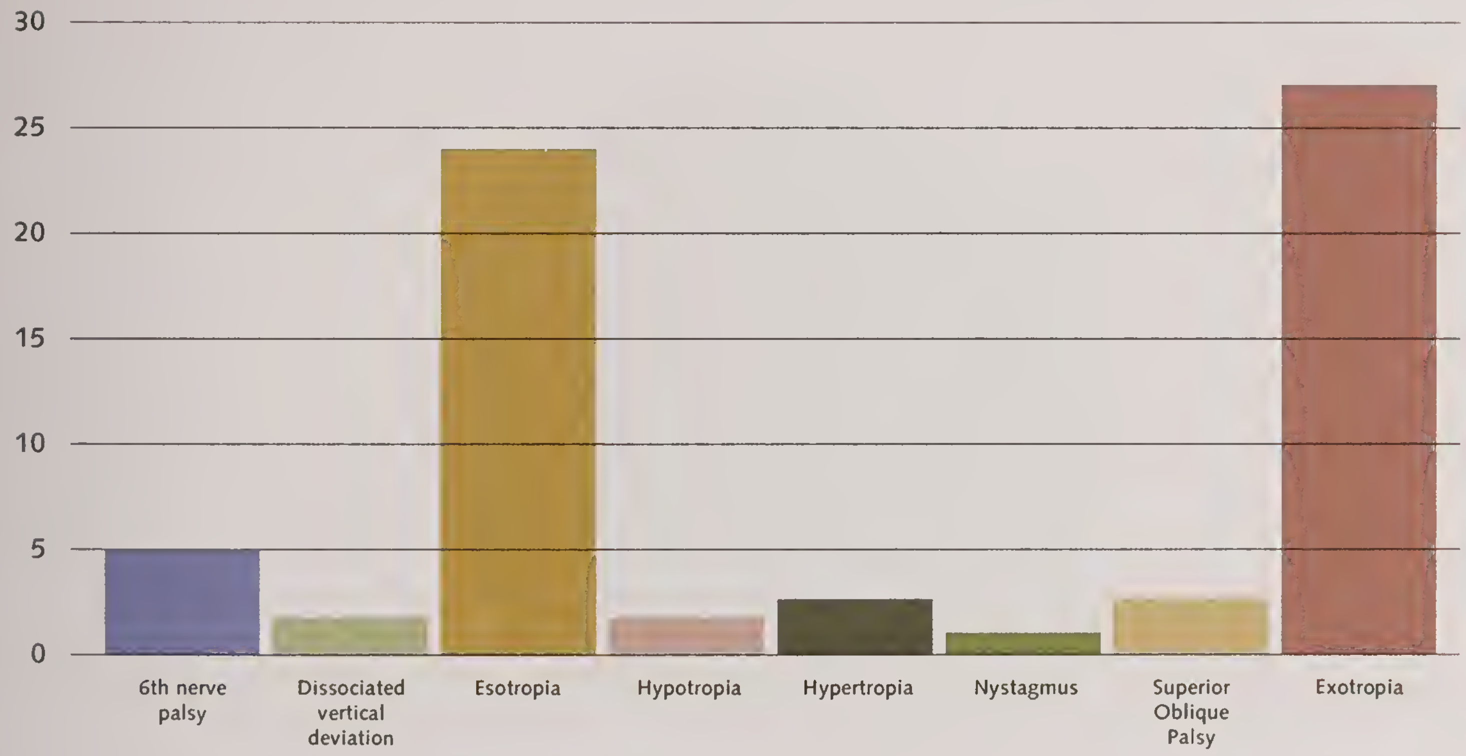

esotropia
extropia
resection surgery
recession surgery
muscle advanced
muscle recessed
part of muscle resected
after

Strabismus Surgery: Distribution of diagnoses

July 2008 to June 2009

The Pediatric Ophthalmology and Strabismus Service performed 100 strabismus surgeries during a one-year period. The following data represents 67 of these patients who had a follow-up of at least four to six weeks.

- *Number of pediatric strabismus cases = 17 cases*
- *Number of adult strabismus cases = 50 cases*



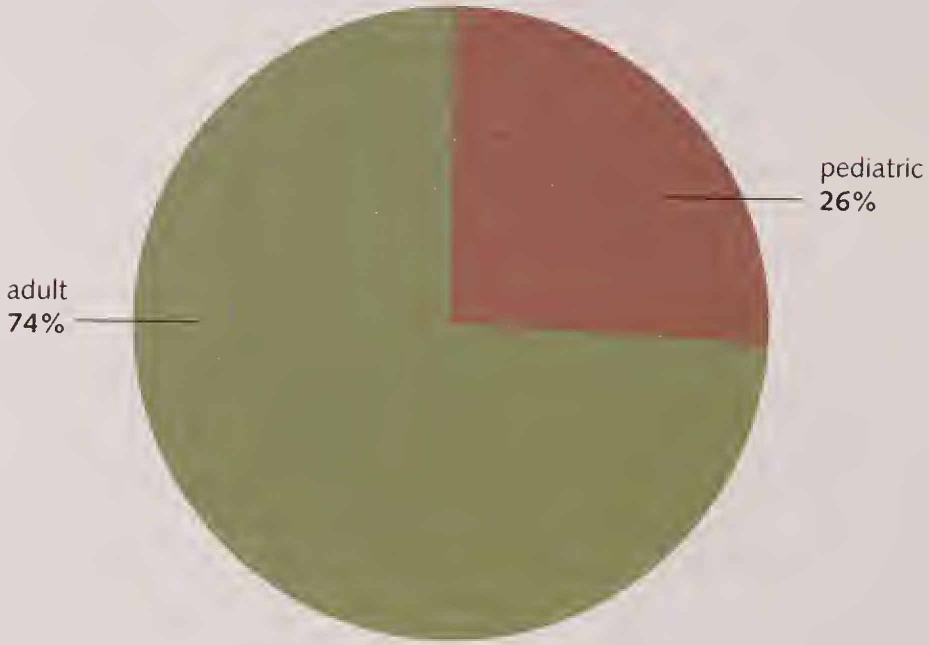
N = 67

This graph above shows the distribution of strabismus cases according to diagnosis. Exotropia (27/67 cases) and esotropia (24/67 cases) were the most common diagnoses. Together, they represent 76.1 percent (51/67) of the total cases evaluated.

Strabismus Surgery: Adult versus pediatric patients

July 2008 to June 2009

One hundred strabismus surgeries were performed by the Pediatric Ophthalmology and Adult Strabismus Service during a one-year period. Of the 67 strabismus surgery patients who had sufficient follow-up, 74 percent (50/67) were adults and 26 percent (17/67) were children.



N = 67

Strabismus Surgery: Surgical success rates

July 2008 to June 2009

One hundred strabismus surgeries were performed by the Pediatric Ophthalmology and Adult Strabismus Service during a one-year period. The surgical success rates of the 67 strabismus surgery patients who had sufficient follow-up data are described below.

Over 80% of patients having strabismus surgery achieved good ocular alignment.

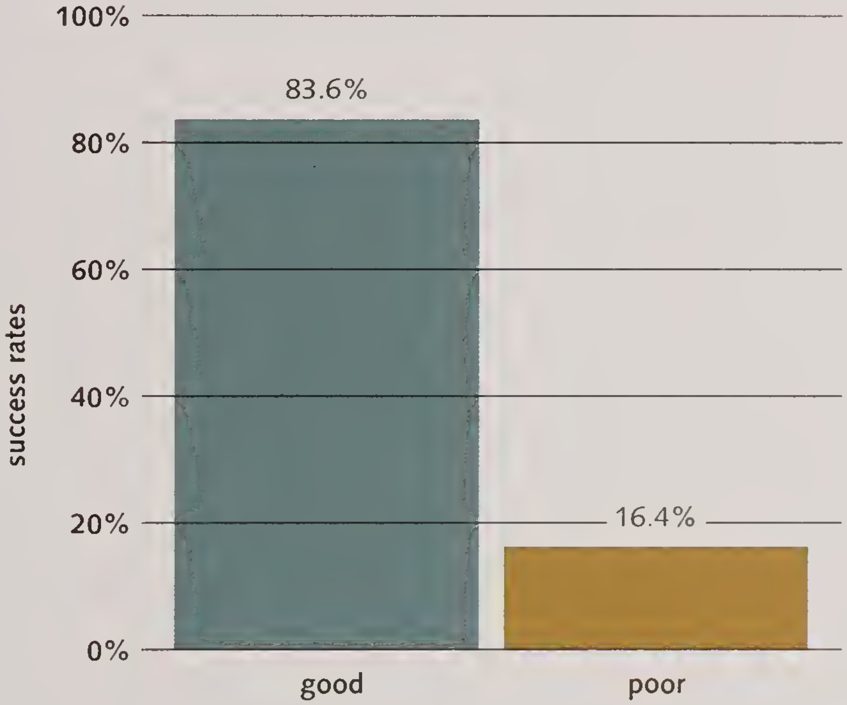
Final pediatric outcome (at four to six weeks)

- ■ Good: Constant deviation <10 prism diopters in primary position and/or anomalous head position resolved
- ■ Poor: Over- or under-corrected

Final adult outcome (at four to six weeks)

- ■ Good: Diplopia disappeared and/or anomalous head position resolved and/or constant deviation <10 prism diopters in primary position
- ■ Poor: Over- or under-corrected

Of the 67 patients that were reviewed, 83.6 percent (56/67) had good outcomes.



N = 67

Emergency and Trauma Eye Care

Massachusetts
Eye and Ear
Infirmary

Emergency and Trauma Eye Care

Emergency Department Director:
Matt Gardiner, MD
Eye Trauma Service Directors:
Ankoor Shah, MD, PhD
Lynn J. P. Perry, MD, PhD

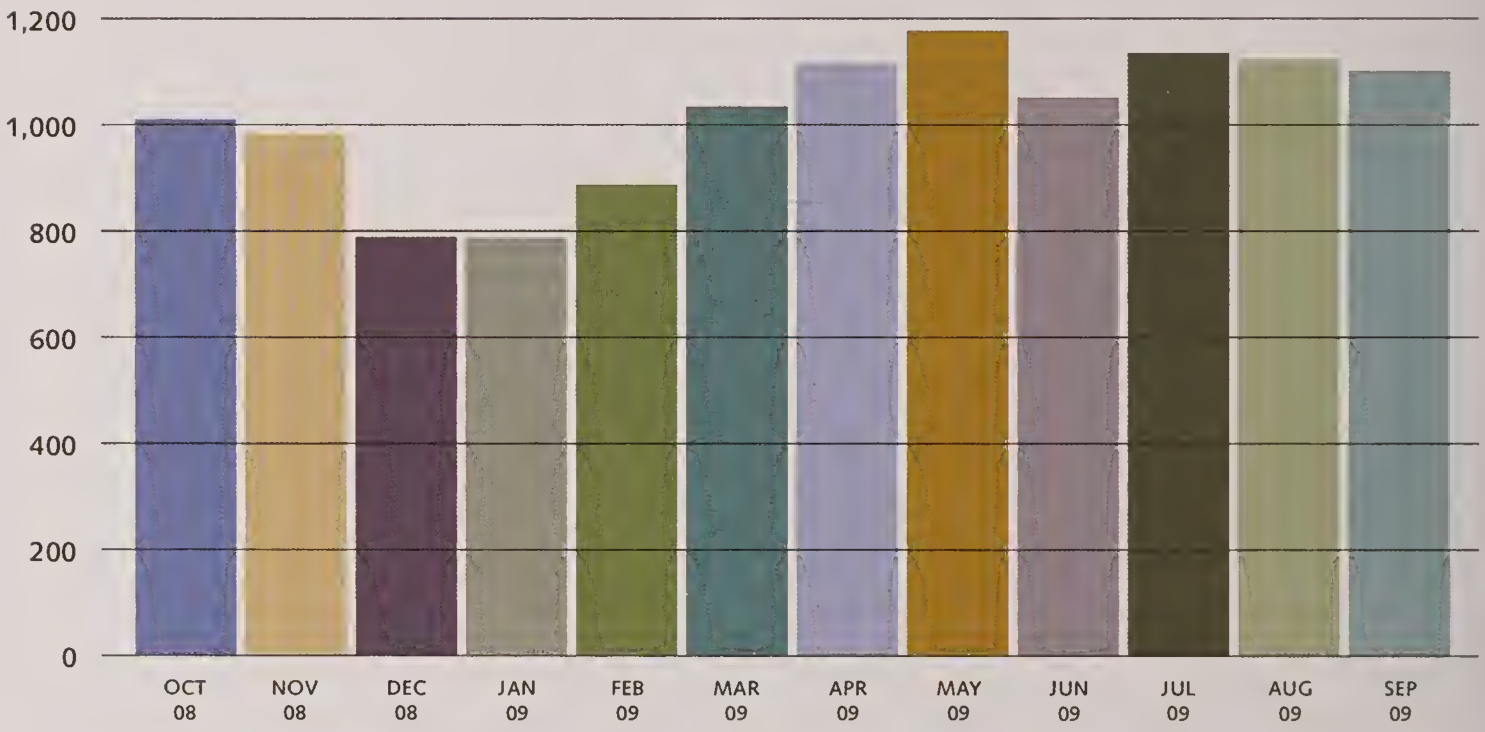
Mass. Eye and Ear's 24-hour, 7 days-a-week, dedicated eye **Emergency Department** is the only specialized facility of its kind in New England. The hospital is a major referral center for eye trauma throughout New England and provides other emergency assistance to patients whose regular ophthalmic provider is not readily available. We provide care for many different types of urgent and emergent eye problems on a walk-in basis. The operating rooms at Mass. Eye and Ear are always available for urgent surgical cases. Our expert staff has decades of experience in treating emergent ophthalmic conditions and handles some 12,000 patient visits yearly. A strong partnership with Massachusetts General Hospital (MGH) enables reciprocal medical and surgical support at both facilities.

The **Eye Trauma Service** at the Mass. Eye and Ear cares for adults and children with severe eye injuries. The Service accepts patient referrals from emergency rooms, health-care facilities and private practices from all over New England. Our highly experienced clinicians provide surgical and inpatient care for open-globe injuries, as well as outpatient management and follow-up for patients with any significant eye trauma. Eye Trauma service staff also provides ocular trauma coverage for both MGH and the Brigham and Women's Hospital. As always, ophthalmology experts from within the hospital are a ready resource if subspecialty services are needed. Eye Trauma staff work closely with subspecialists in Oculoplastics, Cornea, Glaucoma, Retina, Uveitis, Neuro-Ophthalmology, Pediatrics, Strabismus and Vision Rehabilitation to successfully manage patients with complex cases. In addition to patient care, the Eye Trauma Service is actively involved in preventative strategies and clinical research related to ocular trauma.

Emergency Department: Ophthalmology emergency visits

October 2008 to September 2009

This bar graph shows the number of ophthalmology patients seen monthly by the Emergency Department during a one-year period. The number of patients generally increased during the summertime. The average number of patients seen each month was 1,020.



N = 12,239

Emergency Department: Ophthalmology emergency consults at MGH

October 2008 to September 2009

349: number of emergency consults that were at Massachusetts General Hospital and that were performed by Mass. Eye and Ear ophthalmologists, who staff the 24-7 Emergency Department

MASSACHUSETTS GENERAL HOSPITAL
TAXI
Valet P Locations
Wang
Yawkey

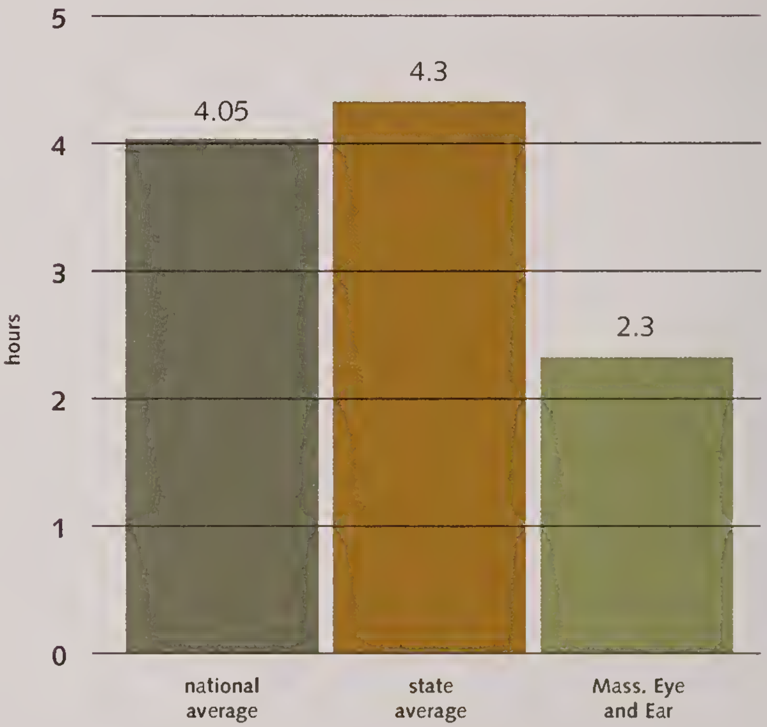
Emergency Department: Ophthalmology wait times

October 2008 to September 2009

The average wait time to see a Mass. Eye and Ear Emergency Department ophthalmologist was 2.3 hours. According to the 2009 Press Ganey Emergency Department Pulse Report, patients in the United States spent an average of four hours and three minutes (4.05 hours) waiting in the Emergency Department. The Massachusetts' (State) average wait time was 4.3 hours.

Wait Times in the Emergency Departments

The average wait to time to see an ophthalmologist in the Mass. Eye and Ear Emergency Department is almost half the average state and national wait times.



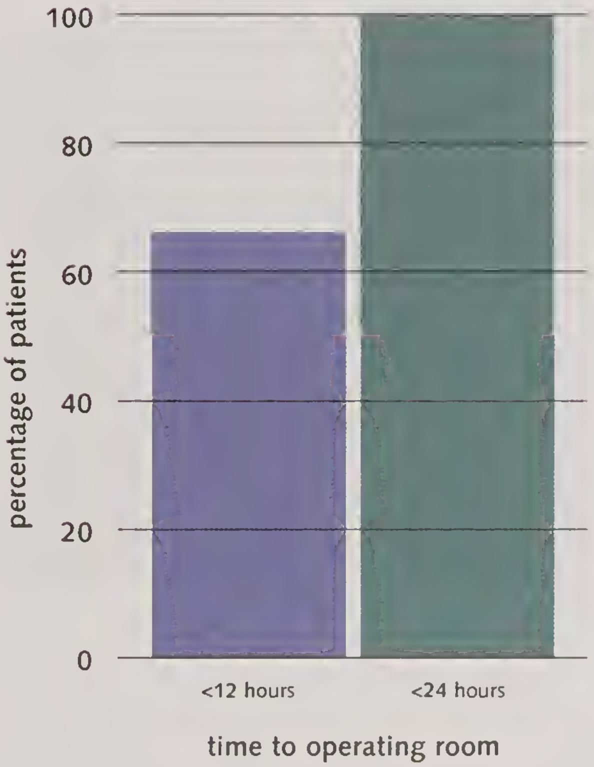
N = 12,239

Eye Trauma Surgery: Time to surgical repair for open-globe injuries

January 2009 to December 2009

100% of patients needing emergency surgery for ocular trauma are taken to the operating room within 24 hours of arrival to Mass. Eye and Ear.

During a one-year period, 95 patients suffered open-globe injuries that required urgent surgical repair by the Mass. Eye and Ear Eye Trauma Service. The mean time from initial arrival time at the Mass. Eye and Ear Emergency Department to arrival time in the Mass. Eye and Ear Operating Room was 9.1 hours (range: 40 minutes to 22.2 hours), with 66 percent of patients taken to the operating room in under 12 hours. All 95 patients (100 percent) were taken to the operating room within 24 hours, the standard of care for this type of ophthalmic trauma.

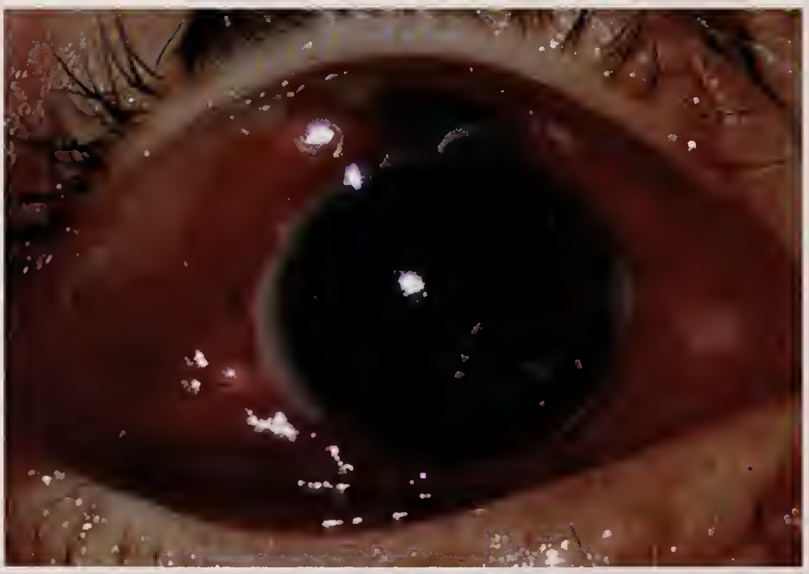


N = 95

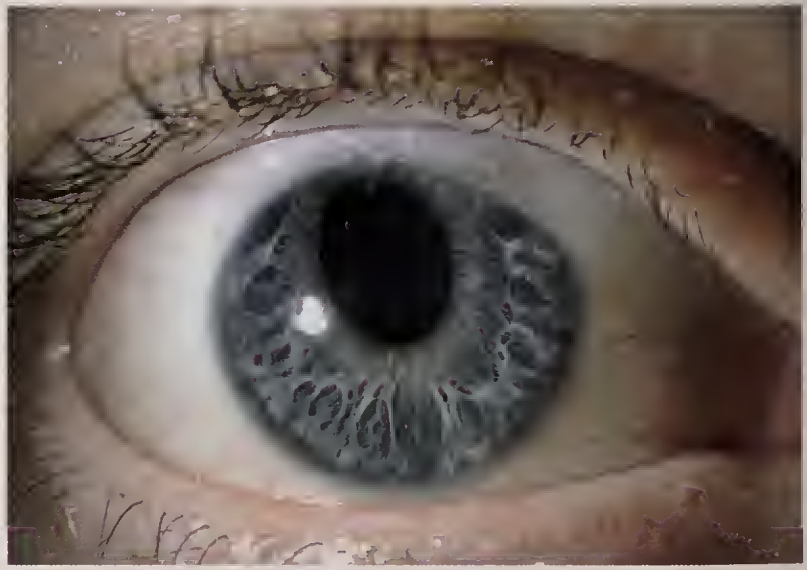
Time from presentation to operating room for open-globe repair: 6.7 hours

The photos below illustrate a patient who ha eye trauma. At presentation to the Emergency Department, the pre-operative vision was "light perception" (left photo). The patient was in the operating room by 6.7 hours, and his post-operative vision was 20/20 (right photo).

Photos courtesy Ankoor Shah, MD, PhD



Pre-operative vision: light perception



Post-operative vision: 20/20 vision

Eye Trauma Surgery: Endophthalmitis; rates of post-operative infection after open globe repair

January 2009 to December 2009

During a one-year period, 95 patients had open-globe repair by the Eye Trauma Service, with no cases of endophthalmitis reported.

Infection rates after eye trauma surgery performed at the Mass. Eye and Ear are the lowest rates reported in the country.

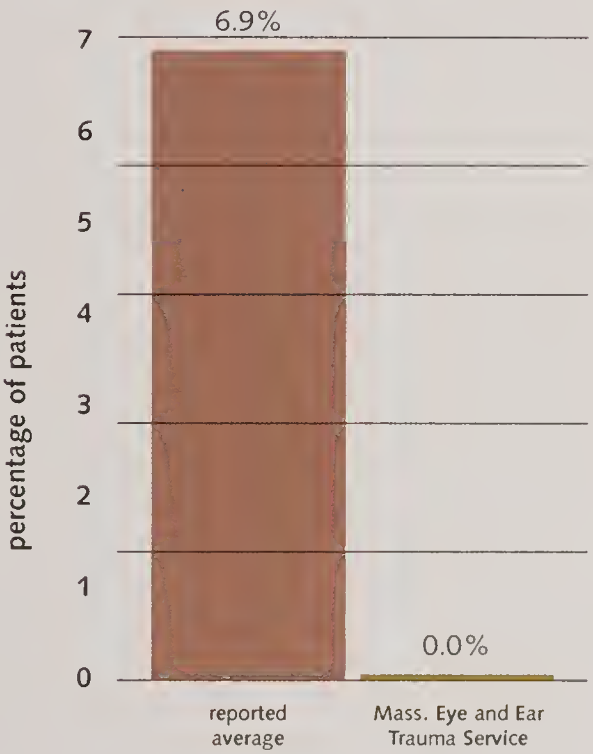
During a 7.5-year period (January 2000 to July 2007), 675 open-globe injuries were treated at the Mass Eye and Ear. Intravenous vancomycin and ceftazidime were started on admission and stopped after 48 hours. Patients were discharged on topical antibiotics, corticosteroids, and cycloplegia. Of these 675 eyes, 558 had at least 30 days of follow-up (mean, 11 months). The overall percentage of endophthalmitis was 0.9 percent (or 5/558 cases). Three were culture-positive cases, and two were culture-negative cases.

A standard protocol including surgical repair by a dedicated eye-trauma service and 48 hours of IV antibiotics were associated with a post-traumatic endophthalmitis percentage of less than one percent. A review of the literature suggests that endophthalmitis rates around the world range from 2.6 to 17 percent (mean 6.8 percent). The United States National Eye Trauma Registry has reported an endophthalmitis rate of 6.9 percent after open-globe repair.

Based on the Mass. Eye and Ear experience and the low percentage of cases with endophthalmitis, we recommend that institutions adopt a standardized protocol for treating open-globe injuries and consider the use of prophylactic systemic antibiotics.

Reference: Andreoli CM, Andreoli MT, Kloek CE, Ahuero AE, Vavvas D, Durand ML. Low Rate of Endophthalmitis in a Large Series of Open Globe Injuries. Am J Ophthalmol 2009, 147: 601-608.

Rates of Endophthalmitis



N = 95

Eye Trauma Surgery: Sympathetic ophthalmia; rates after open-globe repair

January 2009 to December 2009

During a one-year period, 95 patients had open-globe repair by the Mass. Eye and Ear's Eye Trauma Service. During this time, there were no cases of sympathetic ophthalmia of the contralateral eye.

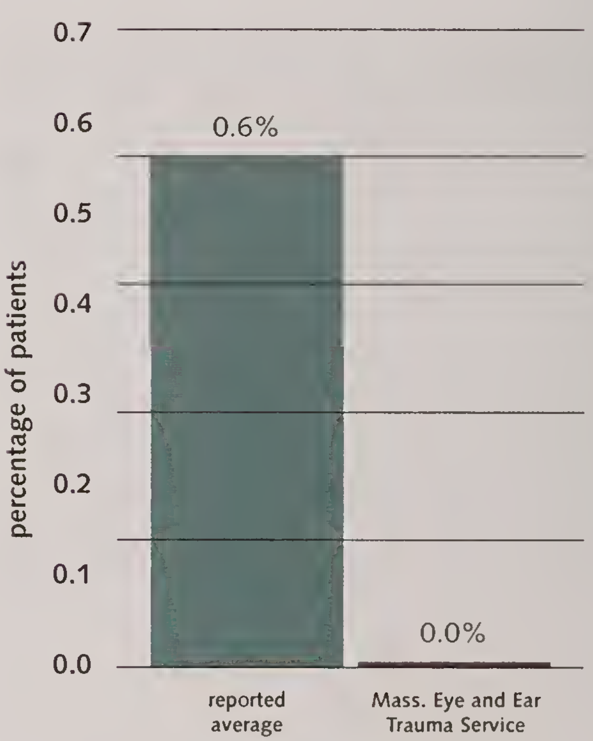
Mass. Eye and Ear's Eye Trauma Service has some of the lowest enucleation rates nationwide and some of the lowest rates of sympathetic ophthalmia reported.

Sympathetic ophthalmia is a devastating and visually-threatening problem that can occur in the non-injured eye after an open-globe injury. It has been suggested that an eye with no visual potential following trauma should be enucleated (removed) within two weeks of the initial traumatic event. In theory, this may decrease the risk of sympathetic ophthalmia in the "sympathizing" or fellow eye. Previously reported rates of sympathetic ophthalmia in the recent literature are about 0.6 percent for non-surgical ocular wounds.

From January 2000 to June 2007, 660 open-globe injuries were treated by the Mass. Eye and Ear's Eye Trauma Service. Fifty-five eyes have undergone enucleation (including four eviscerations), 11 primarily and 44 secondarily. Two patients (0.3 percent) developed sympathetic ophthalmia but have maintained good vision in the sympathizing eye with prompt diagnosis and treatment.

References: Savar A, Andreoli MT, Kloek CE, Andreoli CM. Enucleation for open globe injury. Am J Ophthalmol 2009; 147: 595-600.
Damico FM, Kiss S, Young LH. Sympathetic ophthalmia. Semin Ophthalmol 2005; 20: 191-197.

Rates of Sympathetic Ophthalmia



N = 95

Neuro-Ophthalmology Service

Massachusetts
Eye and Ear
Infirmary

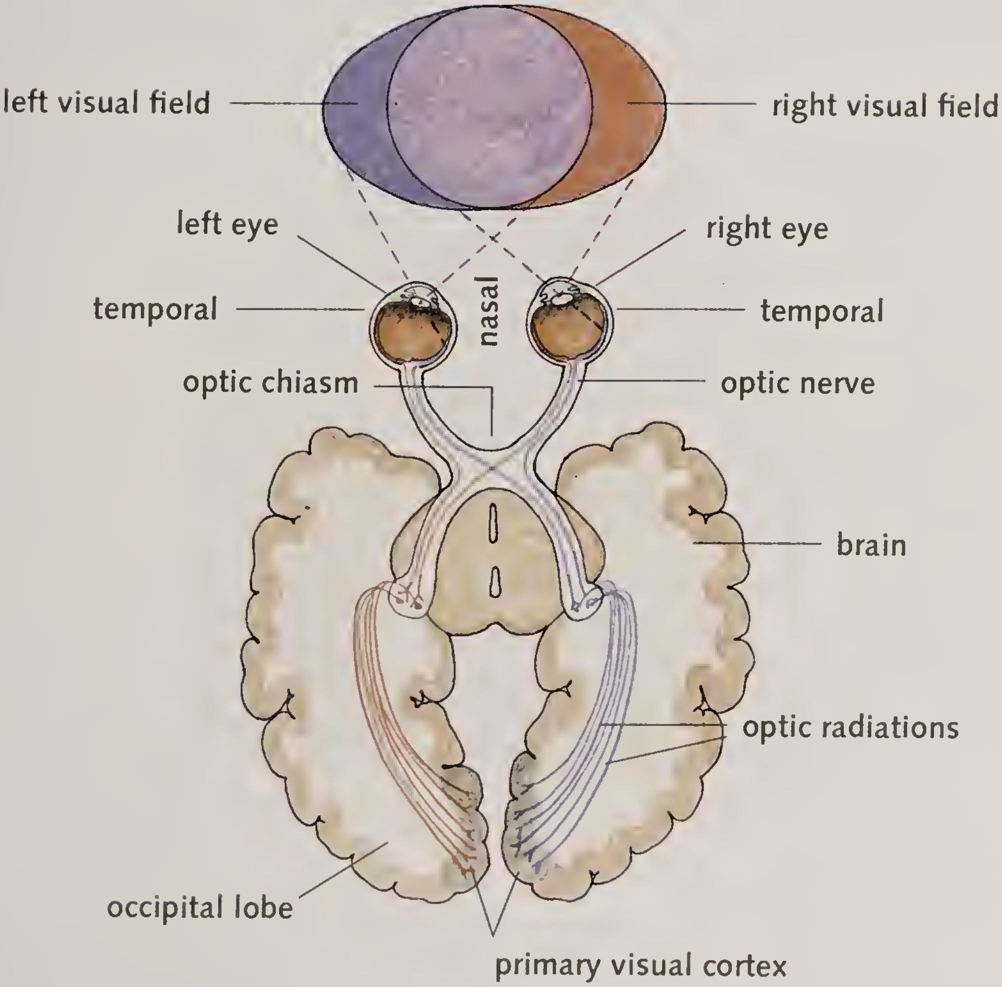
Neuro-Ophthalmology Service

Director: Joseph F. Rizzo, III, MD

The practice of Mass. Eye and Ear's Neuro-Ophthalmology Service began in the 1940s under the guidance of Dr. David Glendenning Cogan, one of the most influential and seminal contributors to the fields of neuro-ophthalmology and ophthalmic pathology. In this same spirit of excellence, our Neuro-Ophthalmology Service today offers the highest level of expertise and care to patients available anywhere in the world. Our three, full-time faculty physicians are trained and licensed in both ophthalmology and neurology. Worldwide, only eight other neuro-ophthalmologists are trained in both specialties, and no other Neuro-Ophthalmology Service retains more than one faculty member with dual training.

Mass. Eye and Ear's Neuro-Ophthalmology Service provides regular and emergency evaluation of patients with optic neuritis, ischemic optic neuropathy, brain tumors involving the optic nerves or chiasm, unexplained vision loss, strokes that cause visual loss or double vision, transient monocular blindness, migraine with visual symptoms, myasthenia gravis, multiple sclerosis, mitochondrial disease, and muscular disease that affects the eye. The team specializes in the diagnosis of diseases of the optic nerve and brain that reduce vision as well as diseases that cause double vision. On a daily basis, our expert physicians collaborate closely with the neurologists and neurosurgeons of the Massachusetts General Hospital (MGH) and provide consultation services to MGH inpatients. In addition, one of our specialists includes evaluation and treatment of adult strabismus in his practice.

The Brain/Eye Connection


left visual field
right visual field
left eye
right eye
temporal
nasal
temporal
optic chiasm
optic nerve
brain
optic radiations
occipital lobe
primary visual cortex

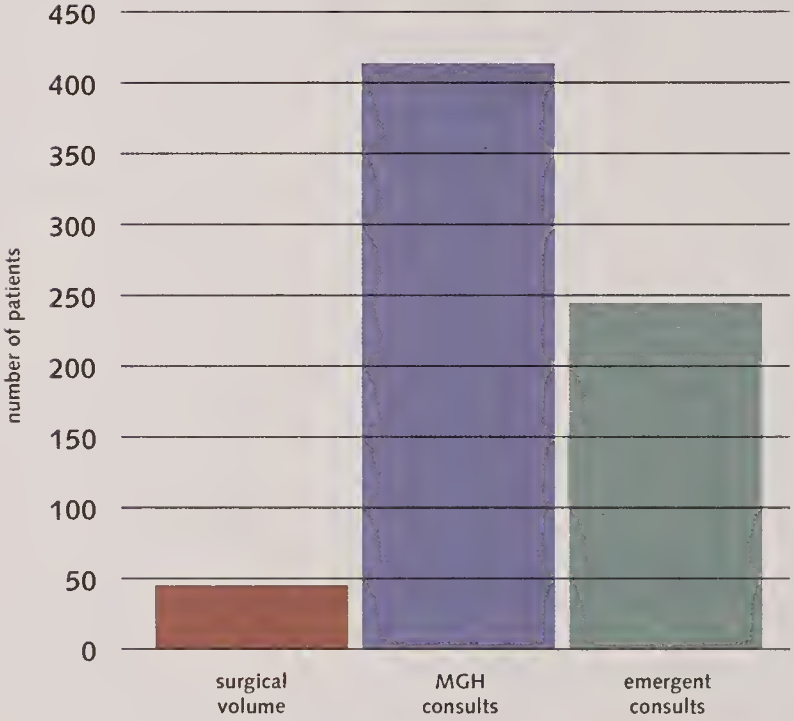
Neuro-Ophthalmology Service: Types of services performed in neuro-ophthalmology

October 2008 to September 2009

Types of services offered by the neuro-ophthalmology service include the following:

- *Outpatient visits (4,356)*
- *Surgery cases (47)*
- *Massachusetts General Hospital (MGH) consults (413)*
- *Emergent consults (247)*
- *Same day MRI scan interpretation*

In addition to 4,356 outpatient visits per year:

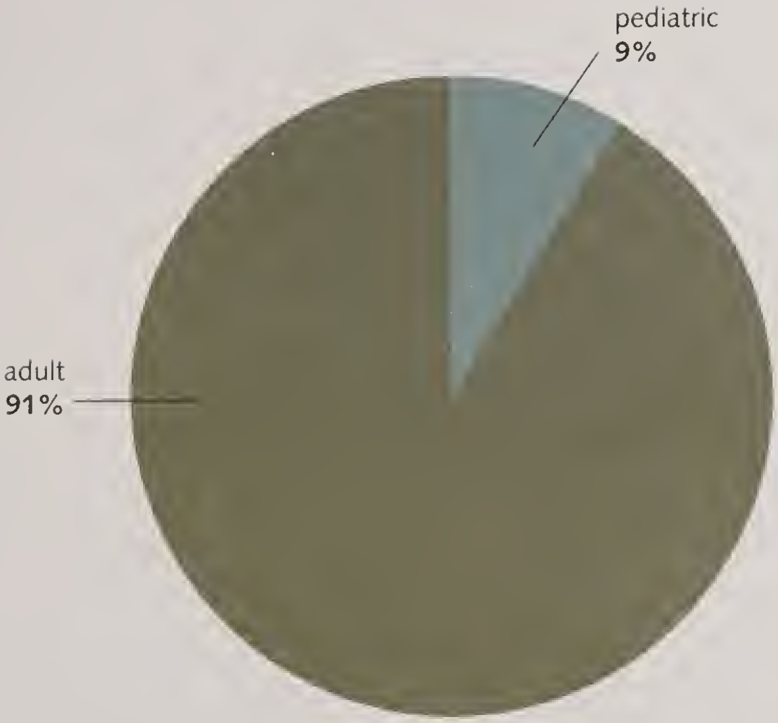


N = 707

Neuro-Ophthalmology Service: Adult versus pediatric patients

October 2008 to September 2009

Of the patients seen by the Neuro-Ophthalmology service from October 2008 to September 2009, 9% were pediatric patients.



N = 4,356

Neuro-Ophthalmology Service Highlight: Boston Retinal Implant Project

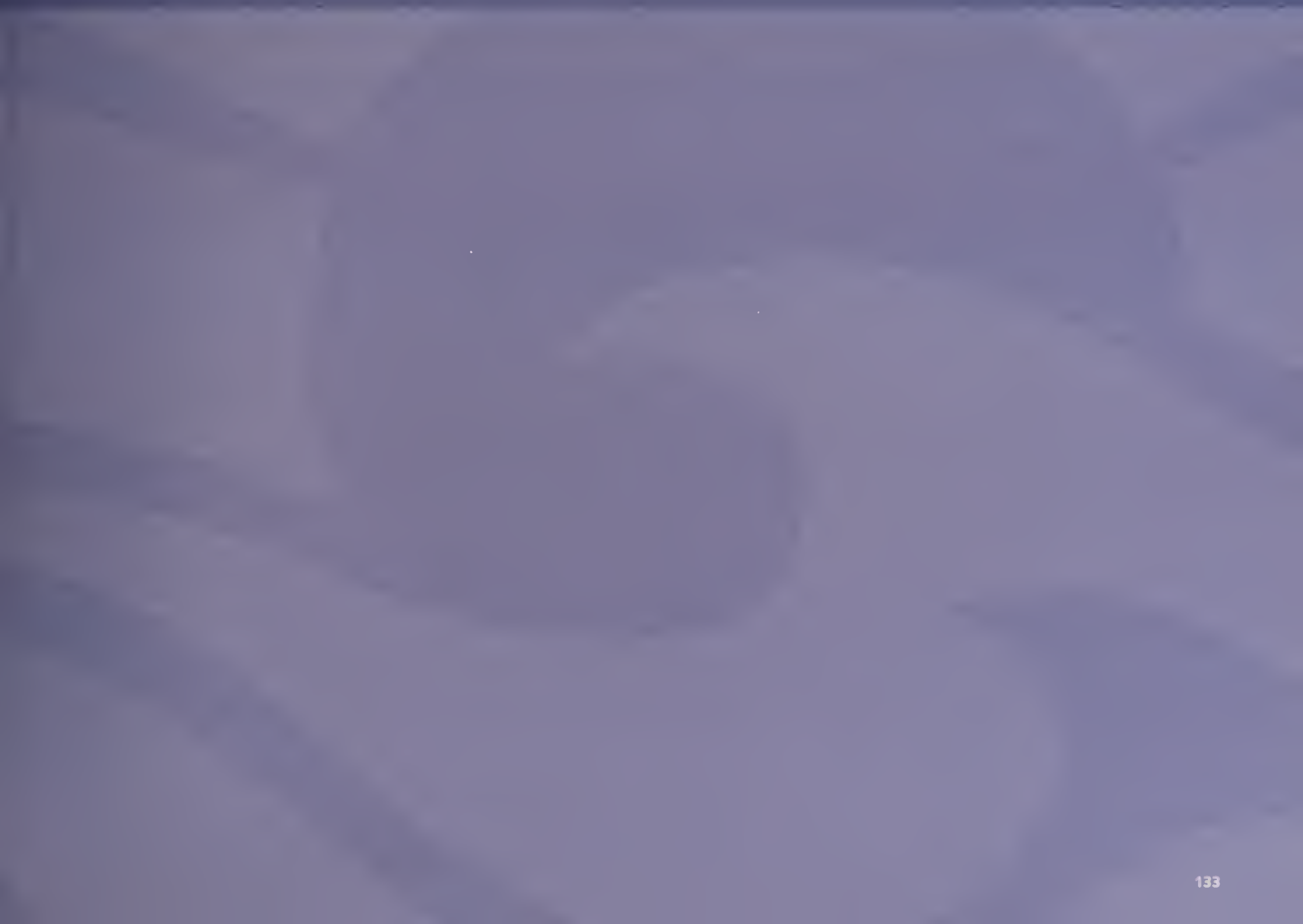
Dr. Joseph Rizzo founded the Boston Retinal Implant Project in the late 1980s, which spawned the development of the field of retinal prosthetic research that now includes 23 research programs and companies in seven countries worldwide.

In 1998, Drs. Rizzo and John Loewenstein performed the first surgery to insert a microfabricated electrode array onto the retina of a human eye. This was a major milestone toward the development of an advanced retinal prosthesis, which will electrically stimulate healthy nerve cells in the retinas of patients with either retinitis pigmentosa or age-related macular degeneration to restore some measure of vision.

This is a graphic image of the retinal prosthesis that has been designed by the Boston Retinal Implant Project. The Project was founded at the Mass. Eye and Ear and exists as a collaborative effort with the Massachusetts Institute of Technology and the Veterans Administration. External electrical components are housed within a pair of glasses; other electronic components are implanted around and behind the eyeball. The implanted components will not be visible from the outside. The electronic components on the glasses will communicate wirelessly to the implanted components.

Immunology and Uveitis Service

Massachusetts
Eye and Ear
Infirmary



Immunology and Uveitis Service

Director: George N. Papaliodis, MD

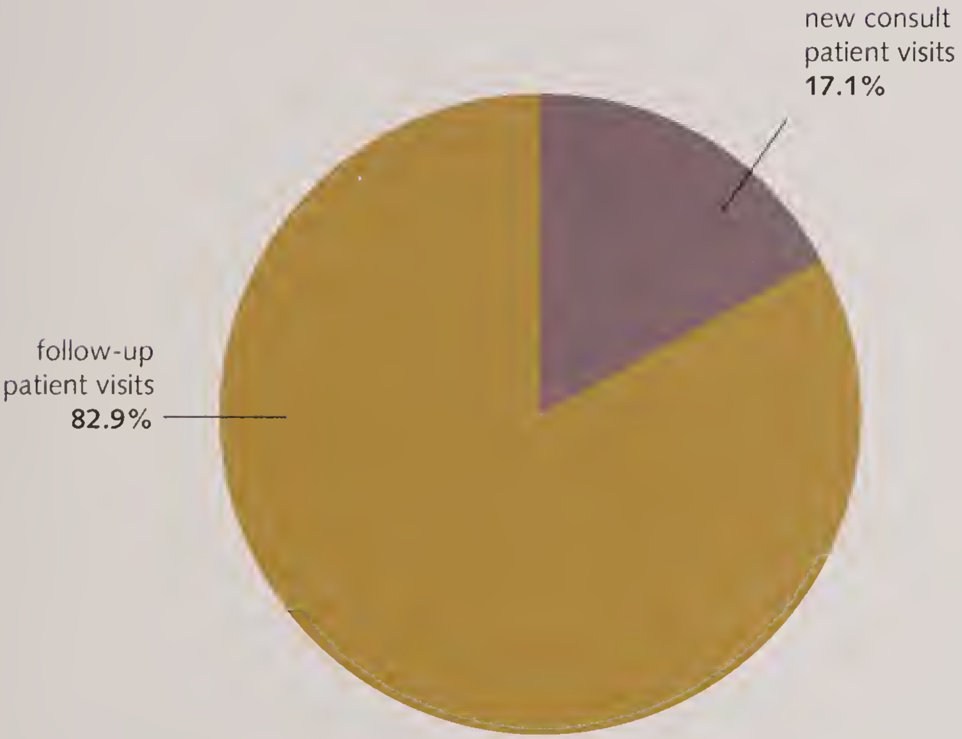
The Ocular Immunology and Uveitis Service at Mass. Eye and Ear provides diagnostic and therapeutic care to patients with inflammatory eye disease. Patients are referred by other ophthalmologists to our specialists for surgical and medical treatment of infectious and immunologic ocular disorders. The Service also provides subspecialty consultation and advice at the request of referring ophthalmologists.

Uveitis refers to inflammation inside the eye and is the third leading cause of blindness worldwide. Treatment for conditions related to ocular immunology and ocular inflammatory disorders requires a multi-disciplinary approach that overlaps internal medicine and ophthalmology. Our Immunology and Uveitis Service physician scientists are cross-trained in Mass. Eye and Ear's retina, cornea, and immunology and uveitis services and offer a unique combination of skills and expertise. In addition to patient care and physician education, they are involved in scientific studies to define the diagnostic, treatment and prognostic characteristics of immunology and uveitis patients. The results of their efforts afford patients the most novel methods and treatments available today for treating ocular inflammatory diseases.

Uveitis Service: New patient consultations

February 2009 to January 2010

Almost 4,000 patient visits occur annually at the Mass. Eye and Ear Uveitis Service. From February 2009 to January 2010, 17.1 percent (669 of 3,910) of these visits were new patients who were referred to the Uveitis Service by other ophthalmologists requesting subspecialty consultation and advice.



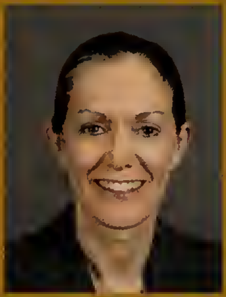
N = 3,910

Vision Rehabilitation Service

Massachusetts
Eye and Ear
Infirmary

Vision Rehabilitation Service

Director: Mary Louise Jackson, MD



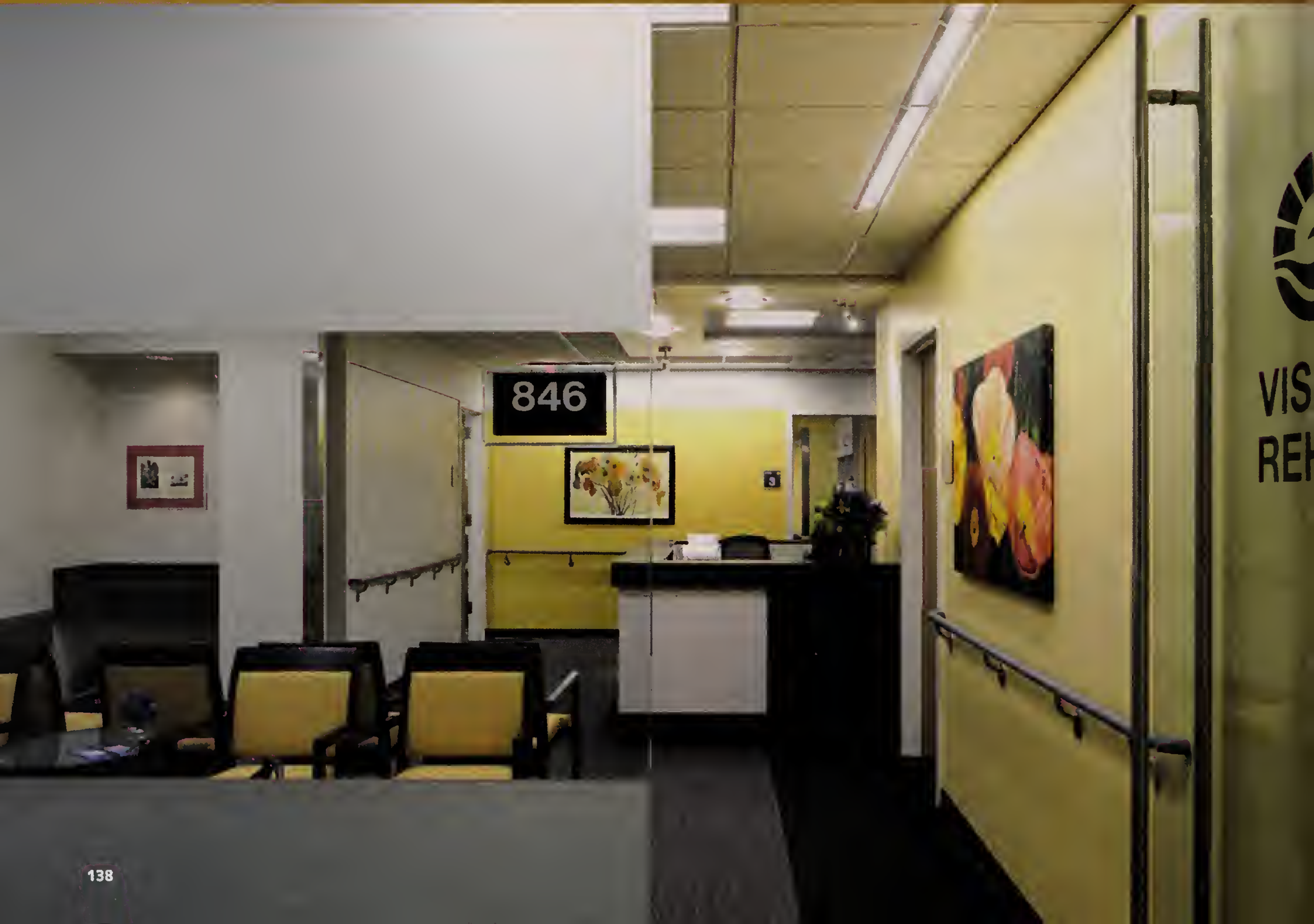
For more than 25 years, Mass. Eye and Ear's Vision Rehabilitation Center (VRC) staff has assisted thousands of patients who suffer from a wide-range of eye conditions that restrict their daily activities, mobility, productivity and independence. Under the direction of Dr. Mary Lou Jackson, the ultimate goal of vision rehabilitation services is to assist patients with partial vision loss learn how to effectively use all of their remaining vision.

Comprehensive vision rehabilitation care addresses five areas:

- Reading rehabilitation
- Activities of daily living
- Safety
- Continued participation in one's community
- Well-being, including adjustment to vision loss

Each patient is evaluated to determine the appropriate rehabilitation interventions. These may include magnification aids, computer accessibility training, and referral to an occupational therapist for training in using devices and strategies to accomplish daily activities independently and safely.

The VRC houses one of New England's only Scanning Laser Ophthalmoscope Macular Perimeters (SLO). This unique tool produces a real-time, high-resolution image of the patient's retina which produces a map of its functioning areas. With this tool, VCR staff is able to understand a patient's visual functioning and, if appropriate, teach the patient to effectively use alternate peripheral areas of the retina. On average, a thousand scans are performed each year.

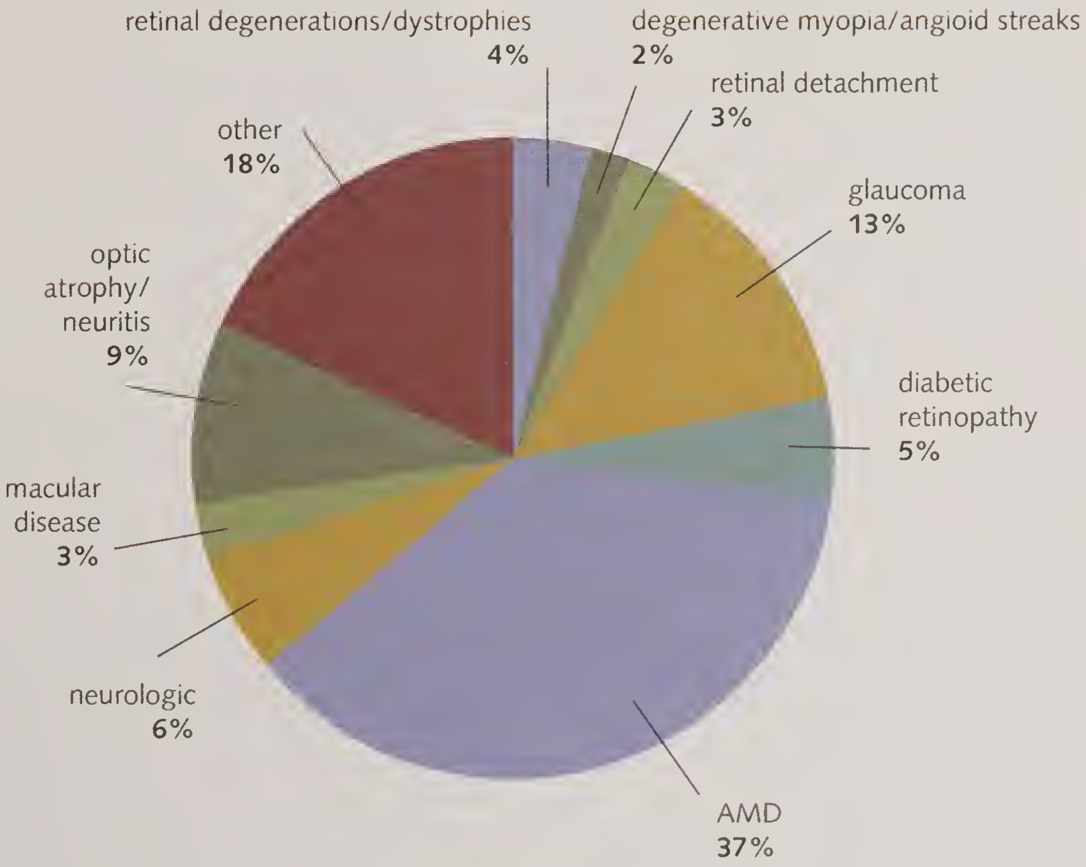


Vision Rehabilitation Service: Distribution of diagnosis types

October 2008 to September 2009

This pie chart shows the distribution of diagnoses seen at the Mass. Eye and Ear Vision Rehabilitation Service. During a one-year period, there were 1,423 outpatient visits representing a total of 705 patients. Of these 705 patients, 793 diagnoses are presented.

A total of 33 patients were diagnosed with retinal degeneration/dystrophy,14 with degenerative myopia or angioid streaks, 23 with retinal detachment,104 with glaucoma (all types), 42 with diabetic retinopathy (all types), 287 with age-related macular degeneration (AMD), 48 with neurologic/ brain disease, 27 with non-AMD related macular disease, 69 with optic atrophy/ neuritis, and 146 with other diseases (including: cataract, aromatic amino acid metabolism disorder, neoplasm, amblyopia, infectious disease, and vascular events).



N = 705

The newly renovated Vision Rehabilitation Department, which opened in 2009, features a number of improvements to help provide better care and better access to patients with vision impairments.

Vision Rehabilitation Service: Patient experience questionnaire results

December 2009 to January 2010

We prospectively evaluated the patient experience at the Mass. Eye and Ear Vision Rehabilitation Center during a one-month period using a four-question survey developed for this Outcomes book. The results are depicted in the following summary:

96.3% rated the quality of service excellent, and **3.7%** very good.

100% found the staff and physicians to be friendly and courteous.

100% agreed that the doctors and staff explained vision rehabilitation options clearly.

100% reported that they were very likely or extremely likely to recommend the Mass. Eye and Ear Vision Rehabilitation Center to others.

Massachusetts Eye and Ear Infirmary
Massachusetts Eye and Ear Infirmary

Mass. Eye and Ear Full-Time Faculty Listing (Boston campus)

**Massachusetts
Eye and Ear
Infirmary**

Comprehensive Ophthalmology and Cataract Consultation

617-573-3202

- Sheila Borboli-Gerogiannis, MD, FACS
- Stacey C. Brauner, MD
- Kenneth Chang, MD, MPH
- Sherleen H. Chen, MD, FACS
- Matthew F. Gardiner, MD
- Scott Greenstein, MD, FACS
- Carolyn E. Kloek, MD

Cornea and External Disease

617-573-3938

- James Chodosh, MD, MPH
- Joseph B. Ciolino, MD
- Kathryn A. Colby, MD, PhD
- Reza Dana, MD, MSc, MPH
- Claes H. Dohlman, MD, PhD
- Pedram Hamrah, MD
- Deborah S. Jacobs, MD
- Ula V. Jurkunas, MD
- Deborah P. Langston, MD, FACS
- Samir A. Melki, MD, PhD
- Roberto Pineda, II, MD

Emergency Ophthalmology and Eye Trauma

Emergency Department: 617-573-3431

- Matthew F. Gardiner, MD

Eye Trauma: 617-573-3022

- Ankoor S. Shah, MD, PhD
- Lynn J.P. Perry, MD, PhD

Glaucoma

617-573-3670

- Stacey C. Brauner, MD
- Teresa C. Chen, MD, FACS
- Cynthia L. Grosskreutz, MD, PhD
- Louis R. Pasquale, MD
- Douglas J. Rhee, MD
- Lucy Q. Shen, MD
- Janey L. Wiggs, MD, PhD

Neuro-Ophthalmology and Adult Strabismus*

617-573-3412

- Dean M. Cestari, MD*
- Simmons Lessell, MD
- Joseph F. Rizzo, III, MD

Ophthalmic Pathology

617-573-3319

- Frederick A. Jakobiec, MD, DSc
- Thaddeus P. Dryja, MD
- Anat Stemmer-Rachamimov, MD

Ophthalmic Plastic and Reconstructive Surgery

617-573-5550

- Aaron M. Fay, MD
- Nancy Kim, MD, PhD
- Francis Sutula, MD
- Manoj M. Thakker, MD

Pediatric Ophthalmology and Strabismus

(a collaboration on-site with Children's Hospital)

617-355-6401

- Linda R. Dagi, MD
- Gena Heidary, MD, PhD
- Melanie A. Kazlas, MD
- Danielle M. Ledoux, MD
- Iason Mantagos, MD

Refractive Surgery

617-573-3234

- Ula V. Jurkunas, MD
- Samir A. Melki, MD, PhD
- Roberto Pineda, II, MD
- Pedram Hamrah, MD

Retina and/or Retinal Degenerations

617-573-3288

- Daniel D. Esmaili, MD
- Evangelos S. Gragoudas, MD
- Ivana K. Kim, MD
- John I. Loewenstein, MD
- Joan W. Miller, MD
- Shizuo Mukai, MD
- Lucia Sobrin, MD, PhD
- Demetrios Vavvas, MD, PhD
- Lucy HY Young, MD, PhD, FACS

Retinal Degenerations/ Electroretinography (ERG) Service

617-573-3621

- Eliot L. Berson, MD
- Alexander R. Gaudio, MD
- Michael A. Sandberg, PhD

Uveitis and Immunology

617-573-3591

- Reza Dana, MD, MSc, MPH
- George N. Papaliodis, MD
- Lucia Sobrin, MD
- Lucy HY Young, MD, PhD

Vision Rehabilitation

617-573-4177

- Mary Louise Jackson, MD

Contact Lens

617-573-3185

- Jill E. Beyer, OD
- Harold Chisholm, RDO
- Charles D. Leahy, OD, MS
- Marjorie Rah, OD, PhD

Optical Services

617-573-3185

fax 617-573-3598

DEPARTMENT OF OPHTHALMOLOGY OTHER LOCATIONS

One Joslin Place,
Longwood Medical Area, Boston, MA
617-573-4180

One Compass Way,
East Bridgewater, MA
508-378-2058

One Montvale Avenue,
Stoneham, MA
781-279-4418

Massachusetts Eye and Ear Infirmary

243 Charles Street
Boston, MA 02114-3096
617-523-7900
617-523-5498 (T.D.D.)
MassEyeAndEar.org

a great day *for* cures

ANNUAL REPORT 2011

Massachusetts
Eye and Ear

MASS. EYE AND EAR LOCATIONS

NORTH

Stoneham: Eye, ENT, Audiology

Stoneham: Retina Consultants

WEST

Concord: ENT, Audiology

Newton: ENT, Facial Plastics, Audiology

BOSTON

Charles Street: Main Hospital, Eye, ENT, Audiology

Longwood: Eye

SOUTH

Braintree: Balance/Vestibular

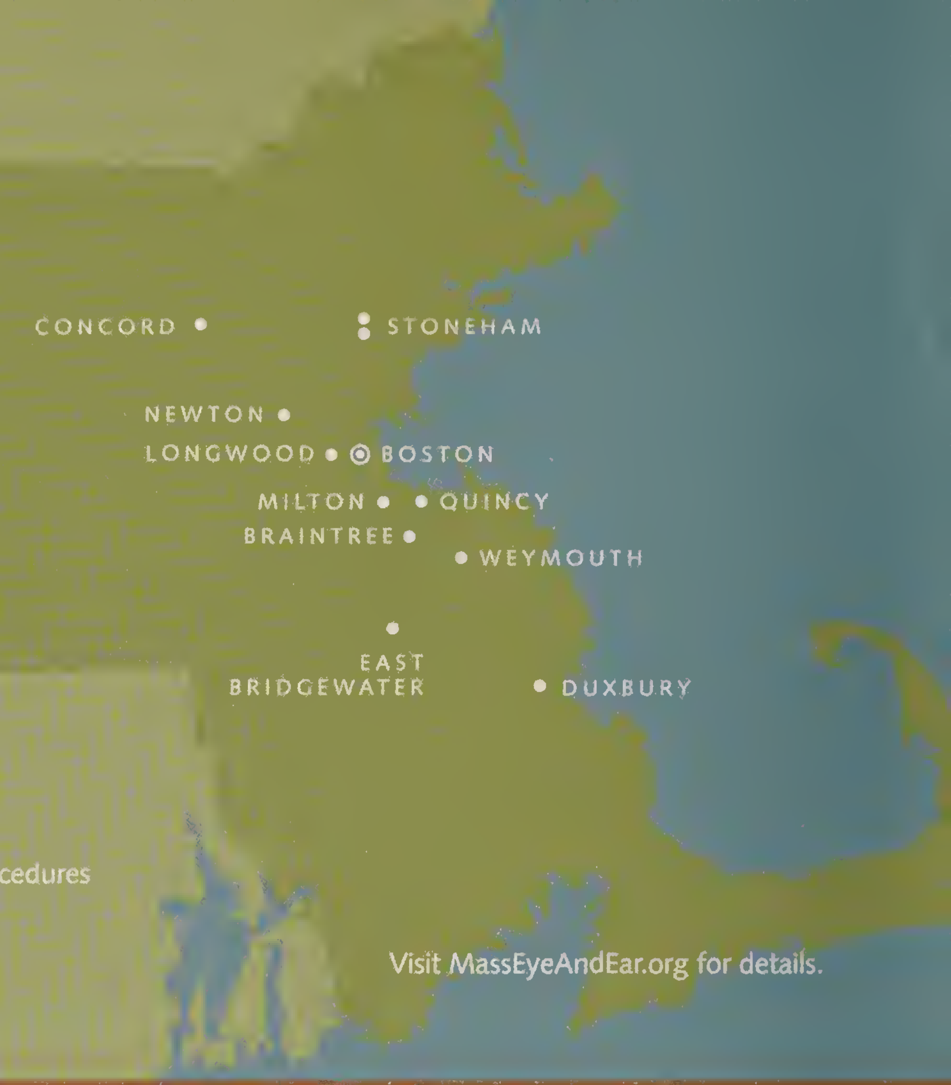
Duxbury: ENT

East Bridgewater: Eye, ENT, Audiology

Quincy: ENT, Audiology, Sleep Center, CT Scanner, Minor Procedures

Milton: ENT, Audiology

Weymouth: ENT, Audiology


CONCORD
STONEHAM
NEWTON
LONGWOOD
BOSTON
MILTON
QUINCY
BRAINTREE
WEYMOUTH
EAST BRIDGEWATER
DUXBURY

Visit MassEyeAndEar.org for details.

In the last year Mass. Eye and Ear has opened several new suburban practice sites, including a new ENT and audiology center on Baker Avenue Extension in Concord and Retina Consultants on Woodland Road in Stoneham. Read more about our expansion south of Boston on page 5. Pictured: Dr. Mark Rounds, Medical Director, Mass. Eye and Ear, Newton.

Cover photo by John Earle Photography

experience *life*

Dear Friends, Colleagues and Supporters,

In this report, we offer you a glimpse of the extraordinary progress Mass. Eye and Ear is making toward advancements in both care and cures.

Without question, the pinnacle event of 2011 was the joining together of Mass. Eye and Ear and Schepens Eye Research Institute. The union forms the world's largest and most robust private vision research center. We are certain that together our physicians and scientists will more quickly advance new treatments and cures from the lab bench to eye patients' bedsides.

We now look forward to the opening in late 2012 of the new Mass. Eye and Ear multi-specialty ambulatory care center at 800 Huntington Avenue in the Longwood Medical/Mission Hill neighborhood. This state-of-the-art center will be home to four operating rooms, physician exam suites and a café. Our new neighbors offered an enthusiastic welcome at the official groundbreaking ceremony, and we look forward to providing outstanding care to them and to you.

As evidenced by the adjacent map, we continue to expand our presence to offer more convenient care by Mass. Eye and Ear physicians to the people of New England. This expansion includes the addition of five ENT physicians in Mass. Eye and Ear South, the opening of a CT scanner and diagnostic center in Quincy, new ENT office sites in Weymouth, Duxbury and Concord, and a Retina practice at a second Stoneham location.

The benefit of this expanded access for eye and ENT patients is immeasurable. Keep in mind that Mass. Eye and Ear hospital services are not only leading edge and world class, they are also low cost to patients and to third-party payers. Massachusetts' three leading insurance providers have all placed Mass. Eye and Ear in their highest value tiers.

Most importantly, as I walk the halls of this hospital and research center, I remain inspired by the passion of our physicians, nurses and caregivers. They are completely focused on providing compassionate, life-changing care and treatment to our patients. Like them, our scientists have intense focus on the future. They are humble, yet determined to pioneer new advancements that will help eye, ear, nose, throat, balance and cancer patients more fully experience life. I could not be more proud of them or their work.

That work is not possible without the friendship of you — our trustees, our patients, our staff — who have made countless contributions of time, treasures and talent. Your continued support of the Mass. Eye and Ear mission is deeply appreciated and critically important to our future.

On behalf of our Board, our Chiefs, and all of our employees — thank you!

John Fernandez

John Fernandez
President & CEO

An excited group gathered on Oct. 27, 2011 for the official groundbreaking for the future Mass. Eye and Ear Ambulatory Care and Surgical Center, Longwood/Mission Hill. From left: Jeff Sanchez (Massachusetts State Representative), Bruce Beal (Chairman, The Beal Companies), John Fernandez (President and CEO, Mass. Eye and Ear) Boston Mayor Thomas M. Menino, Wyc Grousbeck (Mass. Eye and Ear Board Chair), Robert Beal (President, The Beal Companies) and Mike Ross (Boston City Councilor). Not pictured: Stephen Faber (Senior Vice President, The Beal Companies) and Peter Spellios (Senior Vice President, The Beal Companies).

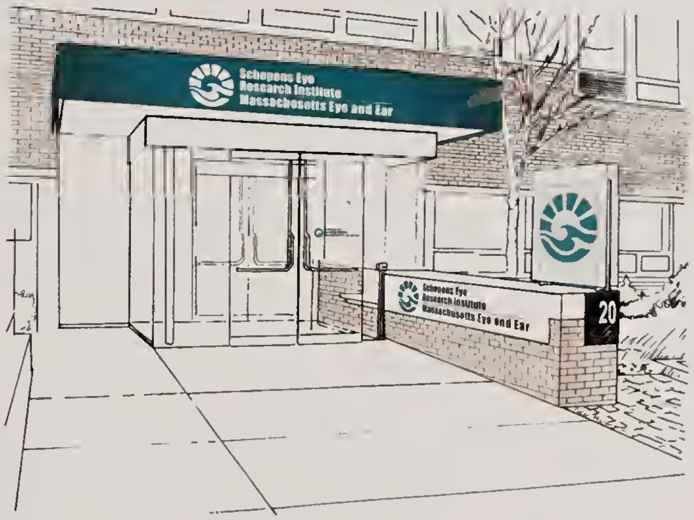
strategy *and* leadership

> *"The promise that every child born today will see and hear throughout his lifetime."*
>
> — *Mass. Eye and Ear's vision for the future as adopted by the Board of Directors*

In 2011 the Mass. Eye and Ear Board of Directors, including Chief of Ophthalmology Joan W. Miller, M.D., and Chief of Otolaryngology, Joseph B. Nadol, Jr., M.D., came together for an off-site strategic retreat which culminated in a renewed focus and dedication to finding cures. Almost 200 years ago our founding physicians eloquently penned the motto, "so the deaf shall hear and the blind shall see." As we approach our third century of care, it is a tenet to which we remain deeply devoted.

Vision 2020 is the blueprint for how we achieve this lofty and audacious goal. Mass. Eye and Ear will not only use clinical growth as a means to treat more patients, but also to enable the research and teaching that will lead us to cures. We achieve this by recruiting and retaining the best and brightest; thoughtfully growing and expanding our clinical reach; and expanding access through the provision of highest-quality, low-cost services.

The integration of Schepens Eye Research Institute, in partnership with Mass. Eye and Ear's Howe Laboratory, the Berman-Gund Laboratory, and the Eaton-Peabody Laboratory, creates a vision and hearing research center unmatched in talent or advancements. It is our hope to soon provide this elite group of research professionals with the improved facilities and technology necessary to advance their work.



As we enter a critical time in our implementation of the Vision 2020 strategic plan, we are very pleased to welcome four of our Schepens colleagues to the Mass. Eye and Ear Board of Directors: DeWalt "Pete" Ankeny, of Wayzata, Minnesota; Charles de Gunzburg of New York, New York; Victoria McCullough of Wellington, Florida; and Kathryn Vecellio of Palm Beach, Florida. All of these individuals are long-time trustees and supporters of the Schepens Eye Research Institute. We look forward to their wise counsel and leadership in their expanded roles as members of the Board of Directors.

We have made several other strategic moves to ensure we are best positioned to thrive. Sunil Eappen, M.D., Chief of Anesthesia, is now also Mass. Eye and Ear's Chief Medical Officer. In this capacity, Dr. Eappen is the physician leader responsible for quality and safety. He is joined by Teresa Chen, M.D., Ophthalmology, and Christopher Hartnick, M.D., Otolaryngology, who are the Chief Quality Officers in their departments.

Other key leadership changes include the promotion of Jeffrey J. Pike to Chief Operating Officer and Eileen Lowell, R.N., M.M., to Chief Nursing Officer; and the hiring of CarolAnn Williams as Vice President Finance and Chief Financial Officer and Alan Long, Ph.D., as Vice President Research and Academic Affairs.

With support from a dynamic and engaged Board of Directors, generous trustees and friends, and a deeply dedicated staff, the entire Mass. Eye and Ear leadership team is now driving forward, carefully planning for the brightest of futures, one in which *every child born today will see and hear throughout his lifetime.*

Norman Knight

Strategic vision is not possible without support from friends like Norman Knight, pictured here with nurse trainers Patti Donovan and Kathy O'Connor at the opening of the new Norman Knight Nursing Center.

"*As a physician, my most important goal is providing the best care for my patients. It's my pleasure to be able to offer an expanded team of experienced specialists at Mass. Eye and Ear South. We're looking forward to making it easier and more convenient for our patients to get the care they need.*"

— Dr. Paul Konowitz, Medical Director, Mass. Eye and Ear South

more specialists, better access, greater convenience

We are pleased to announce the expansion of Mass. Eye and Ear South. Mass Eye and Ear now has six locations that bring the expertise of our board-certified ear, nose and throat, eye, and balance specialists to patients south of Boston. Offering world-renowned care to adults and children, the ENT practice brings together physician offices in Weymouth, Milton, Duxbury, East Bridgewater and Quincy, which includes a new diagnostic center with CT scanner, sleep lab and a minor surgical suite. Our ENT physicians are also on staff at South Shore Hospital, Milton Hospital, Carney Hospital and Quincy Medical Center. Additionally, Mass. Eye and Ear specialists see eye patients in East Bridgewater. We offer complete balance testing and treatment in Braintree. With a total of 12 locations north, south and west of Boston, we're bringing quality specialty care to your doorstep.

left: Dr. Cathy Chong enjoys a lighthearted chat with a pediatric patient at one of several Mass. Eye and Ear South offices. The combined practice provides more convenient access for patients south of Boston who need our world-renowned care and surgery for conditions of the ear, nose, throat, head and neck.

KICKERS
CAMP
1970

"Brayden is now thriving, thanks to his care team at Mass. Eye and Ear," says his mom, Jessica Harwood.

To see Brayden's story, visit Mass. Eye and Ear's YouTube channel.

highest quality *care*

Born early and blind in one eye, Brayden developed a corneal ulcer that threatened to darken his world completely. Drs. Ula Jurkunas and Reza Dana tried everything: corneal transplants and stem cell transplants. Ultimately a keratoprothesis that was developed at Mass. Eye and Ear restored his vision. "He sees now. He knows all of his colors and he's walking," his mom says. "It's life-changing!"

At Mass. Eye and Ear, our doctors, nurses and other caregivers work hard to change lives every day. Providing state-of-the art diagnostics and facilities helps make this job easier. In addition to new locations (see inside front cover), we also enhanced our main campus. This year we opened the new Carolyn and Peter Lynch Center for Laser and Reconstructive Surgery. We also unveiled many relocations and renovations: the Sinus Center, Neuro-Ophthalmology Suite, Eye Plastics Suite, Medical Unit, Ambulatory Surgery Unit and Neurotology Suite.

STAFF ADDITIONS

Providing quality care is not possible if we do not have enough physicians to see those who need us. In 2011 we welcomed many new physicians to our full-time faculty.

These new recruits — along with our existing medical staff, our phenomenal nurses and other caregivers — allow us to see and treat more patients who need us, like Brayden.

In Otolaryngology:

Michael Cohen, M.D., Pediatric Otolaryngology

Felipe Santos, M.D., Otology

In Ophthalmology:

Neena B. Haider, Ph.D., Schepens Retina

Eric Pierce, M.D., Ph.D., Retina

Suzanne Freitag, M.D., Ophthalmic Plastic and Reconstructive Surgery

Rebecca Stacy, M.D., Ph.D., Neuro-Ophthalmology

Michael Yoon, M.D., Ophthalmic Plastic and Reconstructive Surgery

Kevin Houston, O.D., F.A.A.O, K12 Vision Rehabilitation Services and Eli Pe[illegible]tory, Schepens

Leo Kim, M.D., Ph.D., K12 Retina Service and Patricia D'Amore Laboratory, Schepens

In Anesthesia:

Roger Russell, M.D., Associate Chief of Anesthesiology

Arezou Goli, M.D., Staff Pediatric Anesthesiologist

Makara Cayer, M.D., Staff Pediatric Anesthesiologist

Anesthesia also enhanced the staff with two CRNAs:

Leslie Stepp, CRNA, Staff Nurse Anesthetist

Jinny Chang, CRNA, Staff Nurse Anesthetist

This year Mass. Eye and Ear physicians, nurses and clinicians saw more patients than ever before. For the fourth year in a row ambulatory surgical volume increased, this time by 1%, and the number of outpatient visits increased by 3.7%.

FY11 STATISTICS

OR Cases	22,186
Inpatient Beds	41
Inpatient Discharges	1,475
Outpatient Visits	221,097
Emergency Department Visits	19,297

As our numbers of patients grow, our commitment to their safety and quality remains our top concern. We have been a leader in studying and publishing our surgical outcomes. We began publishing outcomes for ophthalmology and otolaryngology in 2009 and 2010. In 2011 we combined and highlighted data from all of our clinical departments, which creates a full view of our highly specialized care. An electronic version of this report and our overall Quality Plan is available on our website at MassEyeAndEar.org.

We also launched our first-ever Schwartz Center Compassionate Care Rounds. These special gatherings enable our caregivers to openly and honestly discuss social and emotional issues that arise in caring for patients. In contrast to traditional medical rounds, the focus is on the human dimension of medicine. Doctors, nurses, social workers and secretaries all have an opportunity to share their experiences, thoughts and feelings. The premise is that caregivers are better able to make personal connections with patients and colleagues when they have greater insight into their own responses and feelings, and are better able to care for our patients' emotional needs.

Finally, we are pleased to have earned a wonderful score in our triennial Joint Commission survey and to be recognized once again for our clinical excellence in *U.S. News & World Report* magazine's Best Hospitals Survey (second in Otolaryngology, fourth in Ophthalmology). We strive to provide the highest quality care; and it is gratifying when our caregivers are recognized for their efforts.

"We are excited about our partnership with Mass. Eye and Ear. With its reputation for excellence in research and treatment of conditions of the face, head and neck, we trust that our investment will help provide better treatment for patients with facial disfigurement."

**— Peter and Carolyn Lynch, Founders,
The Lynch Foundation**

helping patients put their best face forward

Hundreds of thousands of babies are born each year with facial disfigurements that can have a profound impact on their social and emotional development. We want to help. Enter the creation of the Carolyn and Peter Lynch Center for Laser and Reconstructive Surgery at Mass. Eye and Ear. In addition to coordinating a multi-disciplinary team to deliver the most complete care to patients, the Center will conduct cutting-edge research to better understand these disorders and improve treatment. Through fellowships, the Center will also train the next generation of specialists. We'll pass on our knowledge to expand our ability to help patients worldwide.

left: Dr. Oon Tan, a pioneer in laser treatment and technology and Director of the Carolyn and Peter Lynch Center for Laser and Reconstructive Surgery at Mass. Eye and Ear, treats a patient at the Center.

the future of eye research

One of our goals is to provide better treatments for our patients. Research is an important way to achieve this goal. This year we welcomed preeminent clinician-scientist Eric Pierce, M.D., Ph.D., to Mass. Eye and Ear. His research includes groundbreaking work using genetic sequencing and gene therapy to address retinal degenerations. Dr. Pierce aims to develop therapies for these diseases, which are a common cause of blindness. His arrival facilitates the creation of the Mass. Eye and Ear Ocular Genomics Institute. It's a bold step toward the future, bringing together investigators from leading organizations to translate the promise of genomic medicine into clinical care for ophthalmic disorders.

right: Clinician-scientist Dr. Eric Pierce joined Mass. Eye and Ear as Associate Director of the Berman-Gund Laboratory for the Study of Retinal Degenerations and Director of the new Ocular Genomics Institute, where he directs the Genetic Therapies program.

> *"I take extraordinary pride in welcoming Dr. Pierce. Bringing him into the department will accelerate our growth into advanced studies in genomic research and gene therapy, and move us another step closer to eliminating blinding diseases."*
>
> **— Joan W. Miller, M.D.,Chief of Ophthalmology at Mass. Eye and Ear**

research *and* academic leadership

"It is a bad day for blindness!"

— Wyc Grousbeck, Chair, Mass. Eye and Ear

In 2011 we made eye research history, as Mass. Eye and Ear and the Schepens Eye Research Institute united to form the world's largest private ophthalmology research enterprise. Mass. Eye and Ear and Schepens have shared long traditions of research excellence. Our areas of expertise and technology are complementary and are strengthened by this collaboration. Together we will create an even stronger vision research engine with a powerful clinical team, primed to find cures for blinding disease.

In September we launched another exciting initiative that will bring personalized medicine to Mass. Eye and Ear based on patients' unique genetics. The Ocular Genomics Institute, led by Dr. Eric Pierce, offers the hope of improving care for every eye disease we treat, bringing us a step closer to the exciting possibilities of more individualized care.

Eye research is only one area of focus. Mass. Eye and Ear is helping people live independently and fully experience life through its robust bench-to-bedside research programs in hearing, balance, voice and more. Our educators and clinicians also help people around the world through the teaching they do as part of our Harvard Medical School affiliation.

RESEARCH SUCCESSES

- Discovery of an important molecular signaling pathway that drives inner ear stem cells towards a neuronal fate. This discovery is an important step in the ongoing work to devise cell-based therapies to rebuild a damaged inner ear.

- A study of temporal bone histopathology showing that selective inner hair cell loss is remarkably common in premature infants, which shed light on auditory neuropathy which is also more prevalent among premature infants.

- The first study ever to isolate a purely cortical contribution to auditory experience-dependent plasticity, which characterizes the development and plasticity of the neural connection between cortex and thalamus in the days following the onset of hearing.

- A paper in the *Proceedings of the National Academy of Sciences* in which our researchers used precise measurements of otoacoustic emissions to non-invasively measure the sharpness of the auditory filters in the normal human ear, settling a decades-old debate as to the similarity of the human ear to other well-studied animal models.

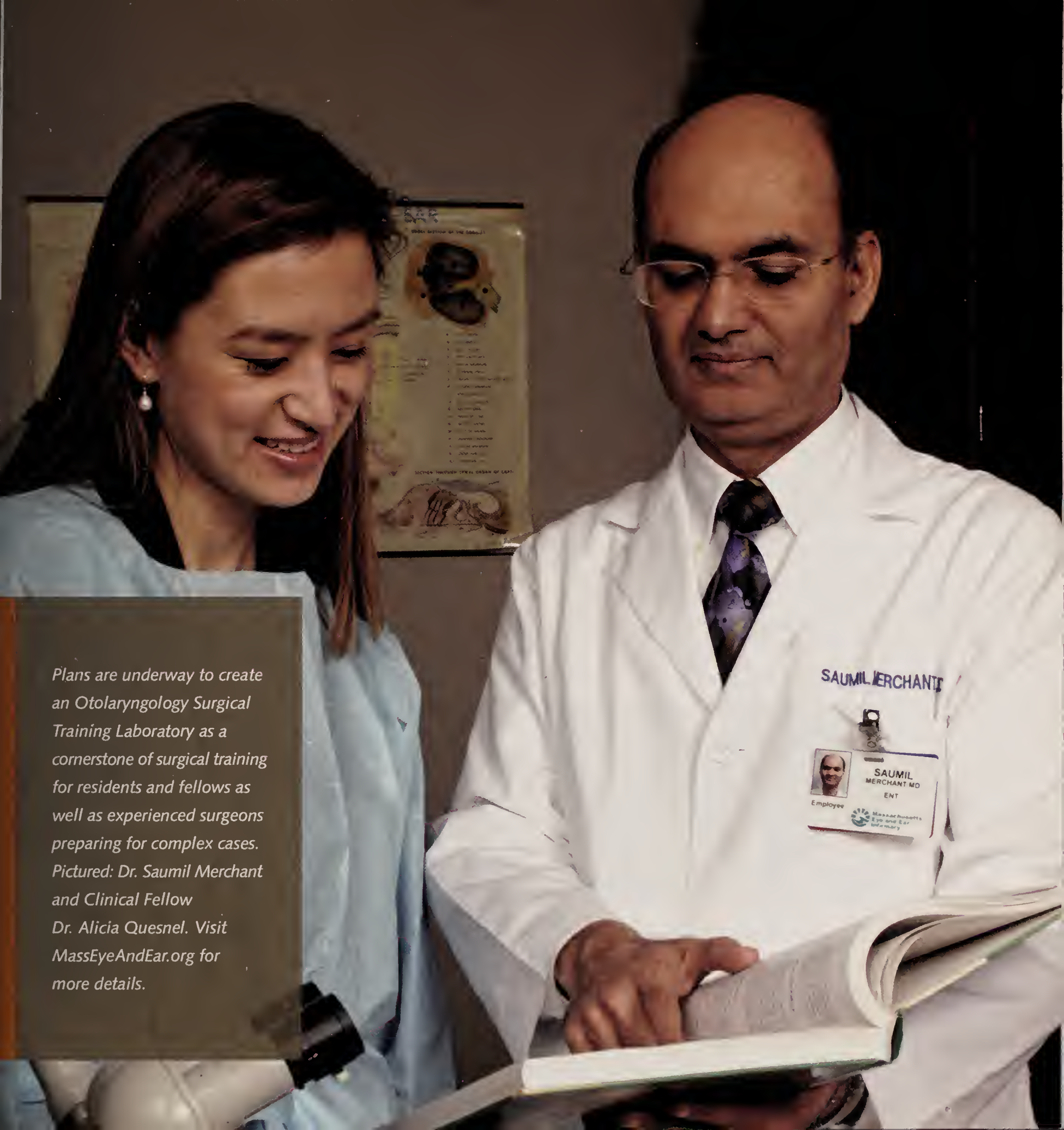
- Determined the effect of topical anti-VEGF therapy for the prevention of corneal transplant rejection. An ongoing study is evaluating the efficacy of combination therapy with topical anti-PDGF and anti-VEGF agents for the treatment of corneal angiogenesis.

- Developed a new genomics-and-bioinformatics-based algorithm for typing new adenoviruses, the most common cause of viral conjunctivitis.
- Participated in a phase I clinical trial of an anti-complement factor D antibody fragment, which shows promise for the treatment of geographic atrophy (advanced form of dry AMD).
- Developed sophisticated methods for imaging and classifying the distinct branching patterns of dendrites (tree-like structures) of retinal ganglion cells, which helps scientists understand how retinal ganglion cells process visual information.

In a challenging and competitive grant environment, our researchers submitted 142 grant proposals and received 54 new awards.

NOTABLE GRANTS INCLUDE:

- The largest grant in Mass. Eye and Ear history awarded to Dr. Michael Gilmore by the National Institutes of Health (NIH) to study antibiotic resistant bacteria as part of a Harvard-wide program, which he leads. Dr. Gilmore also received an NIH grant to study the role of toxins in endophthalmitis.
- Dr. Charles Liberman received an NIH grant to study abnormal cochleas in ears.
- Dr. Christopher Hartnick was awarded an NIH grant for a clinical trial to study voice and reflux therapy for children with vocal nodules.
- Dr. Dan Polley received an NIH grant to study activity-dependent influences on auditory circuits in the brain.
- Dr. Saumil Merchant was awarded an NIH grant to study otopathology by light microscopy and molecular techniques.
- Dr. James Chodosh received an NIH grant to study the immunopathogenesis of adenovirus keratitis.
- Dr. Daniel Merfeld won an NIH grant to study vestibular thresholds, including psychophysical response dynamics.
- The NIH awarded Dr. Joseph Nadol a grant to support the National Temporal Bone, Hearing and Balance Pathology Resource Registry.
- Dr. Bertrand Delgutte received an NIH grant to study bilateral cochlear implants.


SAUMIL MERCHANT
SAUMIL
MERCHANT MD
ENT
Employee
Massachusetts Eye and Ear Infirmary

Plans are underway to create an Otolaryngology Surgical Training Laboratory as a cornerstone of surgical training for residents and fellows as well as experienced surgeons preparing for complex cases. Pictured: Dr. Saumil Merchant and Clinical Fellow Dr. Alicia Quesnel. Visit MassEyeAndEar.org for more details.

- Dr. Janey Wiggs received an NIH core grant for vision research.

We wish to express our appreciation to the foundations and organizations that support our research efforts. We appreciate all that you do to advance science at Mass. Eye and Ear.

ACADEMIC LEADERSHIP

In addition to conducting research to find better treatments and cures, our physicians are also teaching the medical professionals of tomorrow. We are pleased to celebrate six promotions to full professor at Harvard Medical School. Congratulations to Daniel Deschler, M.D., Professor of Otology and Laryngology; William Sewell, Ph.D., Professor of Otology and Laryngology; Mark Abelson, IV, M.D., C.M., Schepens, Clinical Professor of Ophthalmology; James Chodosh, M.D., M.P.H., Professor of Ophthalmology; Andreius Kazlauskas, Ph.D., Schepens, Professor of Ophthalmology; and Joseph Rizzo, III, M.D., Professor of Ophthalmology.

Mass. Eye and Ear Chief of Ophthalmology Dr. Joan Miller, Dr. Mark Abelson and Dr. Claes Dohlman attended the Ophthalmology Alumni Meeting and Reunion Weekend.

EDUCATIONAL HIGHLIGHTS

We held courses that drew faculty and attendees from around the world. We launched new educational initiatives, including a reinvigorated Ophthalmology Alumni Meeting and Alumni Reunion Weekend and held joint Grand Rounds with Shanghai Eye and ENT Hospital of Fudan University.

Our faculty won awards and prizes this year from many organizations, including Research to Prevent Blindness, Harvard Medical School, the Macula Society, the Heed Ophthalmic Foundation, Alcon Research, American Academy of Optometry, the National Organization for Hearing Research, the American Rhinologic Society, the Triologic Society, and the American Laryngological Association. For a full report, visit MassEyeAndEar.org.

LOOKING FORWARD

We are proud of the pioneering research done by our scientists and researchers and of our tradition of research to transform medical care for all patients.

financial *health*

Mass. Eye and Ear's financial results far exceeded expectations in 2011, thanks largely due to the Foundation's acquisition of the Schepens Eye Research Institute.

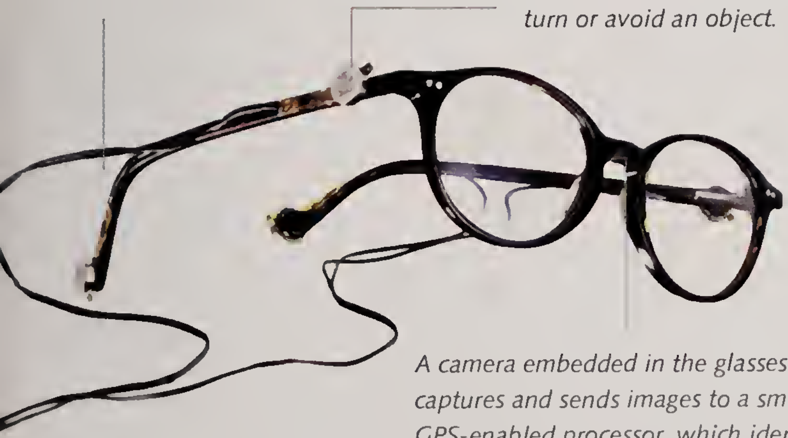
While the year's results identified ongoing challenges, especially in the face of payment reform and third-party payer rates, the year had many strong highlights, including the strong physician recruitment, suburban expansion, and capital improvements which you have read about in earlier pages.

While slightly lower than planned, patient volume at Mass. Eye and Ear remains at an all-time high!

RESEARCH

In 2011, Mass. Eye and Ear scientists secured 54 new grants, totaling $33.9 million. Schepens scientists were awarded 42 grants, totaling $20.7 million.

SMART GLASSES PROTOTYPE


Audio cues identifying objects around the wearer are sent to an earpiece.

Small vibrators placed at the temple and the back of the ear buzz when the patient needs to turn or avoid an object.

A camera embedded in the glasses captures and sends images to a small, GPS-enabled processor, which identifies objects and people and "reads" signs and text via optical character recognition.

RESEARCH COSTS AND EXPENDITURES

	FY10	FY11
Ophthalmology	$14,957,104	$17,801,136
Otolaryngology	$16,137,049	$15,948,862
Schepens		$24,873,953
Total	**$31,094,153**	**$58,623,951**

CURING KIDS FUND

Mass. Eye and Ear was pleased to award the first four research grants from our newly established Curing Kids Fund. This fund was created to help us bring life-changing treatments to children and to accelerate cures and innovations through research.

Four projects were selected from an impressive pool of 15 applicants. Each of the winners received a $50,000 grant to be spent over two years. Their projects focus on helping children who are affected by vision and hearing loss.

Zheng-Yi Chen, D.Phil.
Gene Therapy Approach to Correct Genetic Deafness

Ula Jurkunas, M.D.
Ex-vivo Expansion of Corneal and Oral Stem Cells for Autologous Cornea Transplantation

Daniel Polley, Ph.D.
New Approaches to Auditory Rehabilitation in Children with Hearing Impairments

Joseph Rizzo, M.D.
Development of an Advanced 'Smart Glasses' Prototype to Provide Navigation Assistance for Blind Children

The Curing Kids Fund is also providing funding for quality care for children in need, core support for physicians and scientists, and seeding a Curing Kids endowment for research.

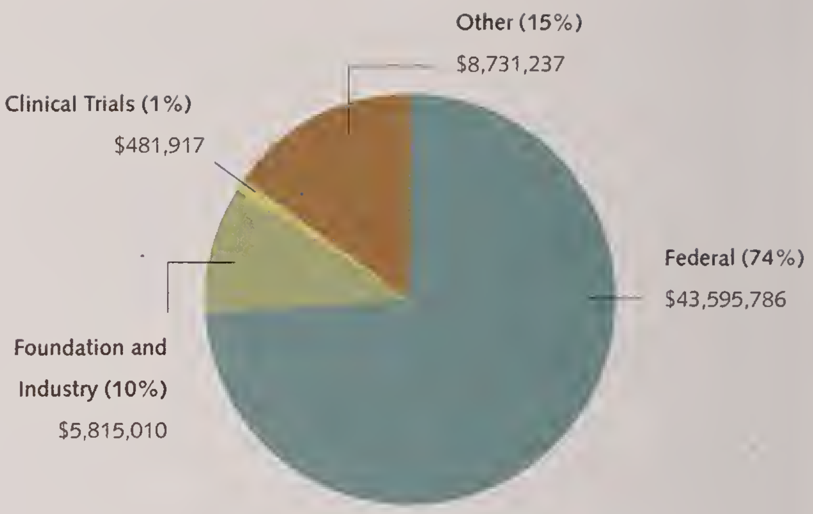
PHILANTHROPY

In 2011 Mass. Eye and Ear received more than $10 million in gifts and grants from generous friends, private foundations and corporations. Their support is an investment in life-changing care, the search for cures, and world-class training of residents and fellows.

We have listed a few of their remarkable gifts here:

- A pledge of $600,000 from the **Abelson Family** to endow The Abelson Family Fellowship in Cornea.
- Gifts totaling $600,000 from **Frederick and Ines Yeatts** to support research in hearing led by Zheng-Yi Chen, Ph.D., and research in age-related macular degeneration led by Drs. Joan Miller and Demetrios Vavvas.

COMBINED RESEARCH COSTS BY SOURCE - FY2011



- A grant of $508,791 from the **American Diabetes Association** to support the search for genes associated with diabetic retinopathy led by Dr. Lucia Sobrin.
- A pledge of $350,000 from **Michelle and Bob Atchinson** to establish the Atchinson Fellowship Fund in Laryngology under the direction of Dr. Ramon Franco.
- A grant of $300,000 from the **Foundation Fighting Blindness** to support retinal degeneration research in the Berman-Gund Laboratory at Mass. Eye and Ear.
- A pledge of $235,000 from the **Donald G. and Yvonne Keamy Family Foundation** to support the Otolaryngology Surgical Training Laboratory and the establishment of the Donald G. Keamy, Sr. Lectureship in Otolaryngology.

Massachusetts Eye and Ear
TEAM EYE & EAR
adidas
26347
9
2011 BOSTON MARATHON

Thanks to our six-year partnership with John Hancock Financial Services, the lead sponsor of the Boston Marathon, Team Eye and Ear has now raised more than $1.4 million to benefit patient care and research. Pictured: Will McNamara, legally blind team member who has run three marathons for Team Eye and Ear.

> *"Teaming up with Mass. Eye and Ear to get the word out about newborn hearing screening and launch the Curing Kids Fund is my way of helping out and making sure that clinicians in the field have what they need to keep doing their work."*
>
> — **Joey McIntyre, Honorary Co-Chair and special guest performer, Sense-ation!**

with a little help from our friends

During an economically challenging time for hospitals, it's nice to have some well-known friends on our side. Joey McIntyre of the New Kids on the Block, as well as entertainer Ayla Brown, are among the resounding voices that have resonated to help raise more than $2 million dollars for the Curing Kids Fund and pediatric research at our Sense-ation! gala. In the spring, former professional boxer Micky Ward, who inspired the movie "The Fighter," joined us for a different type of round at the Mass. Eye and Ear Golf Classic. He helped raise more than $200,000 for the hospital.

left: Joey McIntyre and members of the Perkins Chorus raised their voices on behalf of Mass. Eye and Ear at our annual Sense-ation! gala to benefit the hospital's Curing Kids Fund.

- A bequest of $186,894 from the estate of **Hélène K. Sargeant** to support the Varaztad H. Kazanjian Fund for Pediatric Plastic and Reconstructive Surgery;

- A grant of $175,000 from the **Massachusetts Lions Eye Research Fund, Inc.** to support eye research;

- Gifts totaling $160,000 from the **Grousbeck Family Foundation** in support of the Sense-ation! gala and Curing Kids Fund and to the Mass. Eye and Ear Vision 2020 Fund to support top hospital priorities;

- Gifts totaling $150,000 from **Carmella Kletjian** to establish the Carmella and Steven Charles Kletjian Facial Reconstruction and Plastic Surgery Fund led by Dr. Mack Cheney;

- A gift of $100,000 from **Mr. and Mrs. Gustavo Vollmer** to help create a Neurolaryngology Center of Excellence led by Dr. Phillip Song;

- A grant of $100,000 from **The Solman & Libe Friedman Foundation** to help establish the Solman and Libe Friedman Professorship in Ophthalmology at the Harvard Medical School based at Mass. Eye and Ear;

- A gift of $100,000 from **John and Kathy Kavanagh** to support the Sense-ation! gala and Curing Kids Fund;

In the pages that follow, please find our financial statements, as well as the names of those who have made significant contributions to help advance our mission.

Thank you!

above: Former professional boxer Micky Ward "went a round" for Mass. Eye and Ear during the annual Mass. Eye and Ear Golf Classic.

financial *statements*

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. — Combined Balance Sheet as of September 30, 2011

ASSETS

Current Assets	
Cash and Cash Equivalents	3,500,178
Short-Term Investments	-
Assets Whose Use is Limited	35,560,737
Patient Accounts Receivable (Less Allowance for Doubtful Accounts $3,190,603)	20,577,489
Other Current Assets	17,228,501
Total Current Assets	**76,866,905**
Assets Whose Use Is Limited	
Construction Fund	7,437,318
Capital Interest Fund	-
Special Cash and Capital Reserves	5,138,511
QLT Funds	31,665,832
Under Indenture Agreement	5,254,587
Funds Held for Research	27,509
Total Assets Whose Use is Limited	**49,523,757**
Investments	134,370,687
Pledges Receivable, Net	1,416,484
Remainder Interest in Charitable Trusts	500,733
Beneficial Interest in Trusts	12,887,025
Property, Plant & Equipment (Net of Depreciation of $215,071,702)	157,530,636
Other Assets	
Intangible Assets (Net of Amortization of $1,756,991)	1,718,135
Deposits and Other Assets	2,488,463
Total Assets	**437,302,825**

LIABILITIES AND NET ASSETS

Current Liabilities	
Current Portion of Long-Term Debt and Capital Leases	4,177,718
Accounts Payable and Accrued Expenses	33,085,872
Accrued Interest	269,096
Estimated Third Party Settlements	3,667,990
Total Current Liabilities	**41,200,676**
Long-Term Debt and Capital Leases, Less Current Portion	101,874,801
Asset Retirement Obligation	427,503
Deferred QLT Revenue	52,857,085
Accumulated Post-Retirement Benefit Obligation	54,408
Professional Liability Reserve	1,578,297
Tax Deferred Liability Plan	402,049
Accrued Pension Costs	41,880,785
Annuities and Unitrusts Payable	918,720
Total Liabilities	**241,194,324**
Net Assets	
Unrestricted for General Operations	41,792,513
Board Designated	46,523,516
Total Unrestricted Net Assets	**88,316,029**
Temporarily Restricted	45,618,840
Permanently Restricted	62,173,632
Total Net Assets	**196,108,501**
Total Liabilities and Net Assets	**437,302,825**

financial *statements*

Foundation of the Massachusetts Eye and Ear Infirmary, Inc. — Combined Statement of Revenue and Expenses of the General Fund as of September 30, 2011

NET PATIENT REVENUE

Net Patient Service Revenue	185,258,124
Other Operating Revenue (Including $60,962,330 from Research, Contributions and Grants)	94,483,745
Total Operating Revenue	**279,741,869**

A copy of the audited financial statements is available upon request from the Office of Public Affairs, (617) 573-3340.

OPERATING EXPENSES

Patient Care and Clinical	156,243,257
General and Administrative	64,001,188
Research	37,993,979
Fundraising	1,397,758
Education	2,688,417
Total Operating Expenses	**262,324,599**
Income from Operations	17,417,270
Gains from Operations	**17,417,270**
Other Gains	3,188,568
Excess of Revenues Over Expenses	**20,605,838**
Other Support	(1,193,947)
Increase in Unrestricted Net Assets	**19,411,891**
Pension and Postretirement-related charges other than net periodic pension cost.	(10,213,964)
Increase in Unrestricted Net Assets	9,197,927
In addition, the Foundation received the following restricted funds income: Gifts and Bequests	6,394,726
Investment Income:	
Investment Income (loss), net of investment expenses	(1,671,595)
Realized Gains on Investments	4,986,303
Unrealized Loss on Investments	(2,596,803)
Loss on Beneficial Interest in Trusts	(879,500)

Kimberley Chan, O.D., screens for eye muscle balance problems at the Neighborhood House Charter School.

community *outreach*

> *"It has been great to have the partnership with Mass. Eye and Ear and to be able to offer vision screenings to our kids."*
>
> *— Cara Gould, Executive Director, Camp Harbor View*

The opening of any New Year brings reflection and resolutions to inspire in the year ahead. In 2011 we resolved to strengthen our commitment to serving our community through the many initiatives in our Community Benefits program.

We did more than reaffirm our commitment. We thoughtfully evaluated the goals of our Community Benefits program during a comprehensive community needs assessment.

The project yielded valuable information. It proved we have historically focused many of our resources in the right places. Moreover, it provided guidance around the best places to focus our resources in the years ahead.

Through our Community Benefits program, we continued to do what we do best: provide quality care in our specialties. We also harnessed the expertise of our physicians, researchers and staff to provide the power of information and education. Here are a few of the ways we cared for those who needed us this year.

We were proud to join institutions across the country as a number of our otolaryngologists teamed up to offer free oral, head and neck cancer screenings to the public for the third consecutive year. More than 50,000 people are diagnosed with oral, head and neck cancers each year, most in advanced stages. With our screenings, we want to play our part in reducing this number through early detection.

We coordinated vision screenings for the children at Camp Harbor View in Boston, as well as vision and hearing screenings at the Neighborhood House Charter School in Dorchester. We identified any apparent vision or hearing issues, so parents knew their children could move through their school year full speed ahead.

Our physicians and researchers once again raised their voices to educate members of our community. During our annual "Have You Heard?" Public Forum on Hearing and Hearing Loss, and our "Know Your Nose" Public Forum on the Nose and Sinuses, they educated audiences about the latest medical and surgical treatments and technologies.

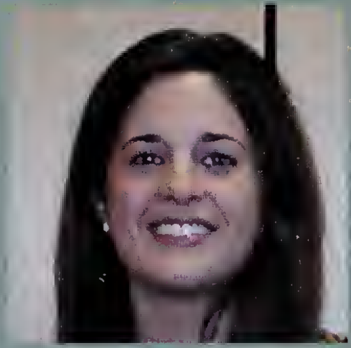
Our partnership with the Vision Coalition grows stronger. We continue to give young adults in the Year Up, Boston, program a leg up on their studies and an easier path to a brighter future, as we furnish them with vision exams and needed eyeglasses.

These initiatives are a small sample from this year's program. Each year, we execute our program invigorated, with our eyes on the prize of reducing health disparities and promoting wellness in our community. In 1824, Mass. Eye and Ear began as a charitable clinic, serving people in need. It's our intention to honor that legacy for years to come.

To see Mass. Eye and Ear's complete Community Benefits Report, visit MassEyeandEar.org.

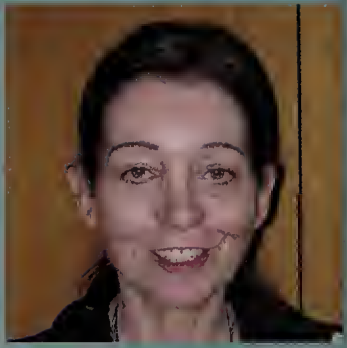
employee *stars*

January:
Van Le
Support Staff



February:
Joanna Ioannidis
Dietary

March:
Charlie Moore-Ward
Audiology



April:
Eileen Hadley
Radiology

May:
Linda Berard
Berman-Gund Laboratory

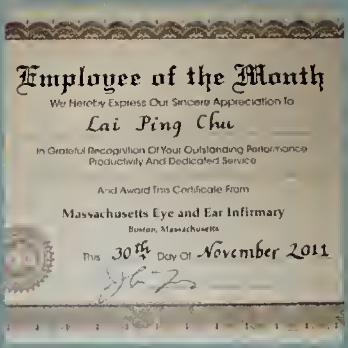
June:
Andrea Lindenmayer
Comprehensive Ophthalmology

July:
Constance Hunt
Vision Rehabilitation Services

August:
Lindsey Donovan
Nursing Administration

September:
Fieona Clarke-Hancock
Patient Accounts

October:
Richard Kinzel
Information Services



Employee of the Month
We Hereby Express Our Sincere Appreciation To
Lai Ping Chu
In Grateful Recognition Of Your Outstanding Performance
Productivity And Dedicated Service
And Award This Certificate From
Massachusetts Eye and Ear Infirmary
Boston, Massachusetts
This 30th Day Of November 2011

November:
Lai Ping Chu
Pharmacy

December:
Anne Pisarri
Social Services

benefactors

The Reynolds Society

Named in honor of Edward Reynolds, M.D. (1793-1881), co-founder of the Massachusetts Eye and Ear Infirmary, the Reynolds Society was established in 1986 to recognize those special friends who make gifts and pledges of $2,500 or more during the fiscal year. Senior hospital-based medical staff and senior managers who give $2,000 or more and other hospital-based medical staff and employees who give $1,000 or more are also recognized as Reynolds Society Members.

Gifts of $500,000 - $999,999

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American Diabetes Association
MED-EL
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Mass. Eye and Ear recognizes and thanks the following friends whose generous support of our mission will continue beyond their lifetimes through bequests and planned gifts. During the fiscal year of October 1, 2010 - September 30, 2011, the following estate gifts were committed or realized upon the donor's passing. We are grateful for their enduring friendship and legacy.

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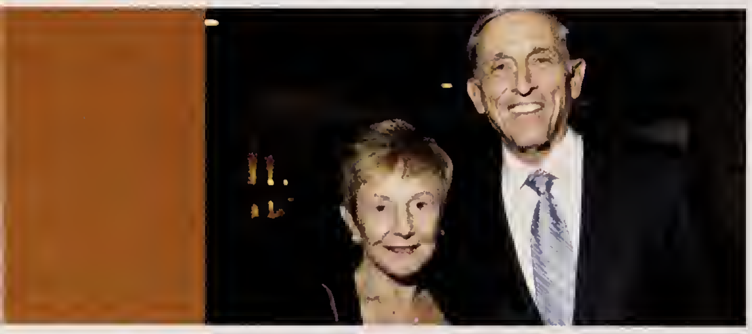

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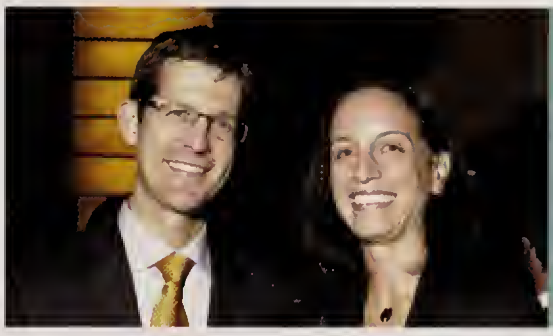

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2011 Annual Report

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MASSACHUSETTS EYE AND EAR INFIRMARY

Quality and Outcomes 2011

Massachusetts Eye and Ear Infirmary

The Mass. Eye and Ear logo signifies the sun rising over rolling ocean waves, suggesting sight and sound.

A Letter from the President

We are proud to present Massachusetts Eye and Ear's first combined Quality and Outcomes Report. This publication follows on the successful 2009-10 launch of our individual Quality and Outcomes Reports in Ophthalmology and Otolaryngology. Combining and highlighting data from all of our clinical departments seemed a natural next step and creates a full view of our highly specialized care and surgery.

With the leadership of our Department Chairs (Joan W. Miller, M.D.; Joseph B. Nadol, Jr., M.D.; Hugh Curtin, M.D.; and Sunil Eappen, M.D.), the commitment of our physicians, and the passion of our staff working as a team, we believe that best quality is demonstrated by best outcomes. The overarching goal of this publication is to drive quality improvement and, therefore, deliver the best patient care possible. In some instances, we openly compare ourselves to the few established national benchmarks in our specialties; but in many more instances we are creating the benchmarks by collecting and publishing results. As with our earlier publications, we hope this serves to open communication and dialogue among providers around the world.

In addition to fostering transparency and accountability, the Mass. Eye and Ear quality team has also focused on improvements to service, patient safety, effective treatments and cost efficiencies. An electronic version of this report and Mass. Eye and Ear's overall Quality Plan is available on our website at **MassEyeAndEar.org**.

We would like to acknowledge the leadership and hard work of the Mass. Eye and Ear Quality leadership team: Linda Belkner, R.N.; Alec Cheloff; Teresa Chen, M.D.; Sunil Eappen, M.D.; Gayle Fishman, R.N., B.S.N., M.B.A.; Christopher Hartnick, M.D.; and Mary Kennedy.

It is our hope that this publication will both help determine some of the universal standards that should be reported by our disciplines, and provide patients with the insights they seek when turning to us for life-altering care.

John Fernandez
President & CEO,
Massachusetts Eye and Ear

Please note that information contained in this book focuses primarily on the work of the full-time staff at Mass. Eye and Ear's main Boston campus, unless otherwise stated.

Clinical Leadership in Quality: 2010-2011

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Hugh Curtin, M.D.
Professor of Radiology, Harvard Medical School
Chief of Radiology, Massachusetts Eye and Ear Infirmary

Sunil Eappen, M.D.
Assistant Professor, Harvard Medical School, Harvard School of Public Health
OGG, Chief of Anesthesiology, Medical Director of the Operating Rooms, Massachusetts Eye and Ear Infimary

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Walter Augustus LeCompte Professor of Otology and Laryngology, Department of Otology and Laryngology, Harvard Medical School
Chief, Department of Otolaryngology, Massachusetts Eye and Ear Infirmary

About Mass. Eye and Ear

Founded in 1824, the Massachusetts Eye and Ear Infirmary is a pre-eminent specialty, teaching and research hospital dedicated to caring for disorders of the eyes, ears, nose, throat, head and neck. Our dedicated staff provides primary and subspecialty care and serves as a referral center for inpatient and outpatient medical and surgical care.

Mass. Eye and Ear is the leading authority in its specialties throughout the northeast and is a resource globally for advances in patient care, research and education. As the primary academic center for Harvard Medical School's Departments of Ophthalmology and Otolaryngology, we are deeply committed to providing a superb education to the next generation of visionary healthcare leaders. Our world-renowned experts are continuously innovating in the fields of translational and bench research, turning insights into cures that benefit countless people. We continue to forge new partnerships and alliances — locally, nationally and beyond our borders — to increase our reach and make our expertise, services and resources available to all who need them.

Pivotal to our clinical quality efforts is the use of the Longitudinal Medical Record (LMR), an integrated and secure system of communication and medical record sharing among the majority of Harvard Medical School's network of 17 hospitals and affiliates. This network facilitates quick and easy communication among referring physicians and Mass. Eye and Ear's consulting ophthalmologists, otolaryngologists and radiologists. It also enables our physicians to instantly tap our in-house specialists, affording seamless and rapid access to some of the best ophthalmologic and otolaryngologic resources available.

Fiscal Year 2010 Volume	
Outpatient Services	269,408
Ambulatory Surgical Services	20,805
Inpatient Surgical Services	1,189
Emergency Department Services	19,324
Discharges	1,529
Fiscal Year 2010 Beds	42
Fiscal Year 2010 Overall Operating Revenue	$246,262,849

Clinical Locations

Boston – Main Campus

Boston – Longwood Medical Area

Braintree

Concord

East Bridgewater

Newton

Quincy

Stoneham

For more information, please visit MassEyeAndEar.org.

Reporting for Duty Cancer-Free

National Guardsman Greg Page was newly married and about to leave for his honeymoon when he noticed a painful bump on his tongue. The 29-year-old non-smoker assumed it was a harmless canker sore, but visits to his dentist, then a head and neck specialist at Mass. Eye and Ear, revealed more. Greg had cancer: specifically poorly differentiated squamous cell carcinoma of the oral tongue.

During a seven-hour surgery, Greg had a third of his tongue removed, replaced with live tissue from his left forearm, which was partially replaced yet again by a small part of his left thigh. He also had a radical neck dissection to remove affected lymph nodes.

Now serving in Afghanistan, Greg is doing well. "The doctors and staff at Mass. Eye and Ear took incredibly good care of me, and actually went to extraordinary medical lengths to save my career by removing enough lymph nodes to conclusively rule out metastasis and thereby spare me from radiation," he said. "They also went to bat for me when I explained how much I wanted to come on this deployment, and they found a way to make it work with the check-up schedule."

Greg recently became a new father. He's finishing up his last tour in Afghanistan and will attend the MIT Sloan School of Management in the fall. He speaks normally and his scars are fading. Best of all, this year he was able to celebrate his first Father's Day, cancer-free.

> **"The doctors and staff at Mass. Eye and Ear took incredibly good care of me, and actually went to extraordinary medical lengths to save my career by removing enough lymph nodes to conclusively rule out metastasis and thereby spare me from radiation."**
>
> **— Greg Page**

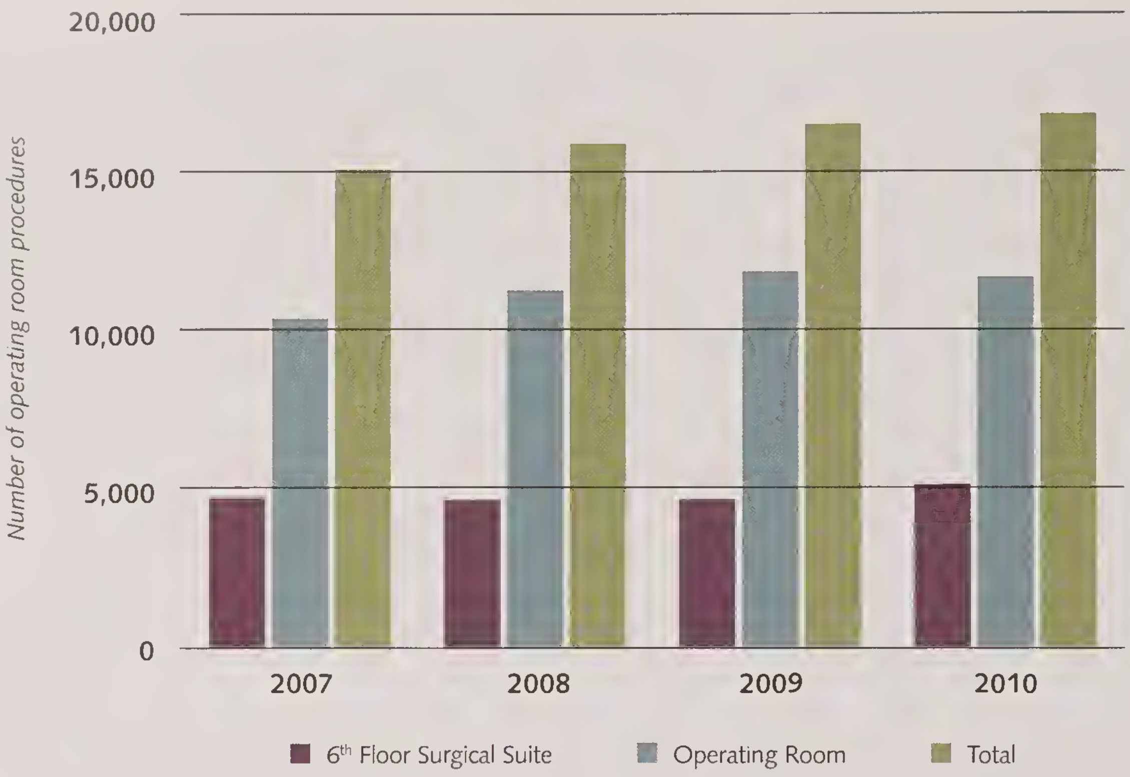
Massachusetts Eye and Ear Infirmary

SURGERY OVERVIEW

The perioperative team at Mass. Eye and Ear cares for a very specialized group of patients from around Boston, New England, the country and the world. We strive to offer the best quality of care to those who need Ophthalmology and Otolaryngology surgery. But what does that mean for patients and providers, and how do we measure it?

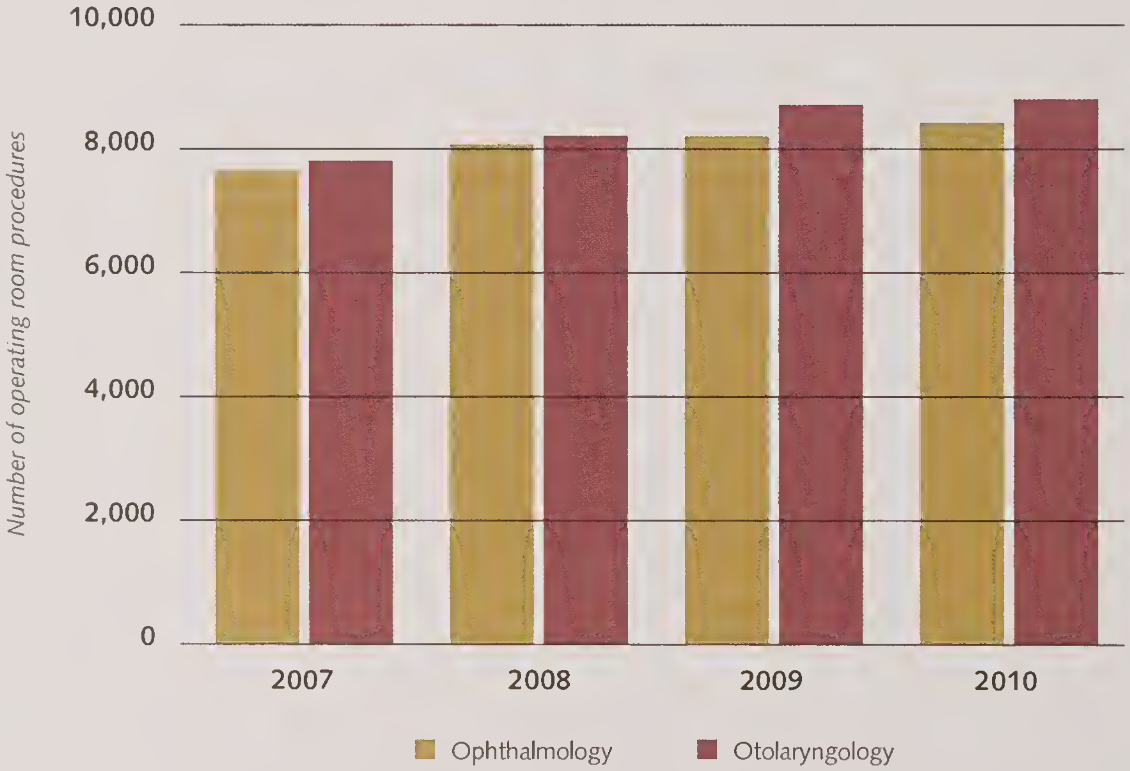
Here we report on a few key surgical factors that demonstrate our commitment to high quality care and its impact on our patients and their caregivers. By publishing our results, we hope to encourage other hospitals to take similar measures with the goal of continuing to improve national outcomes standards. Together, we strive to ensure that every patient receives the best care possible.

Mass. Eye and Ear Surgical Volume (Main Campus)



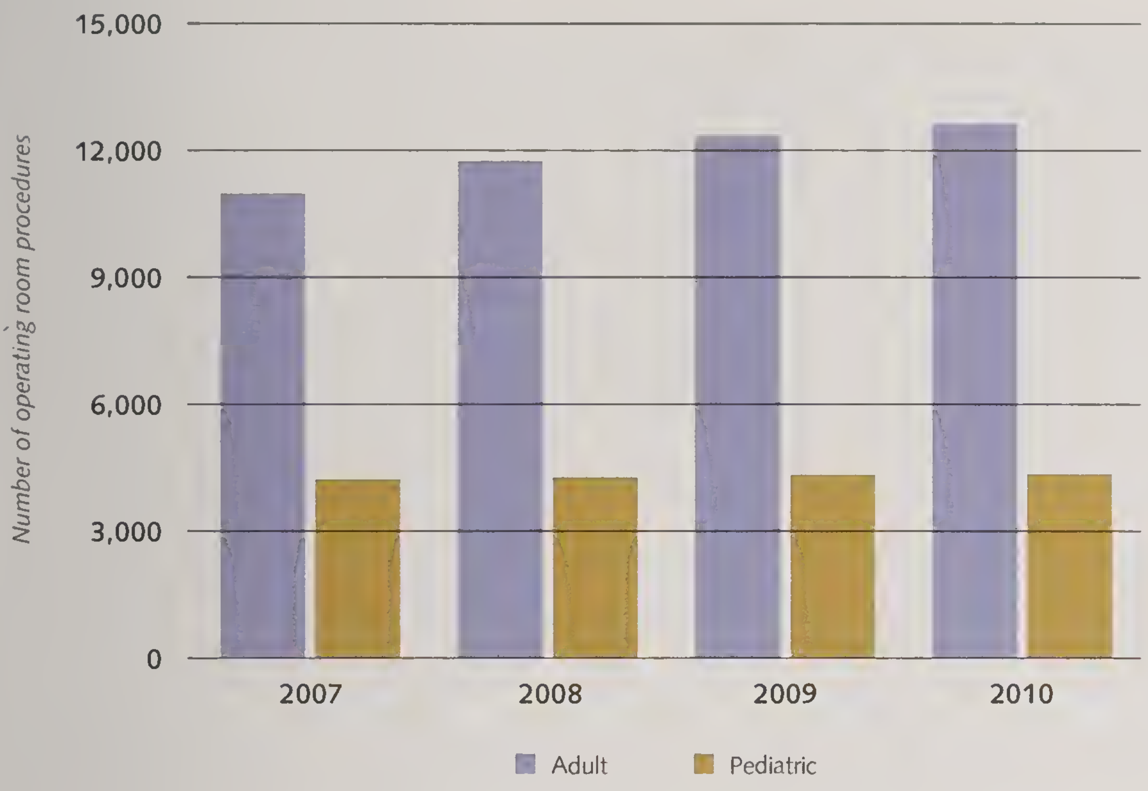
Mass. Eye and Ear has 17 operating rooms at its main campus that are split between a Main Operating Room (MOR) which has 12 rooms and a Surgery Center (SC) which has 5 rooms. The majority of the cases that occu in the SC are ophthalmologic, relatively short, and have 99% of the patients going home on the same day of surgery. The MOR handles the majority of Otolaryngology procedures as well as the majority of the pediatric surgery we perform. All of the urgent and emergency cases that occur in the evenings and weekends occur in the MOR.

Ophthalmology and Otolaryngology Surgical Volume

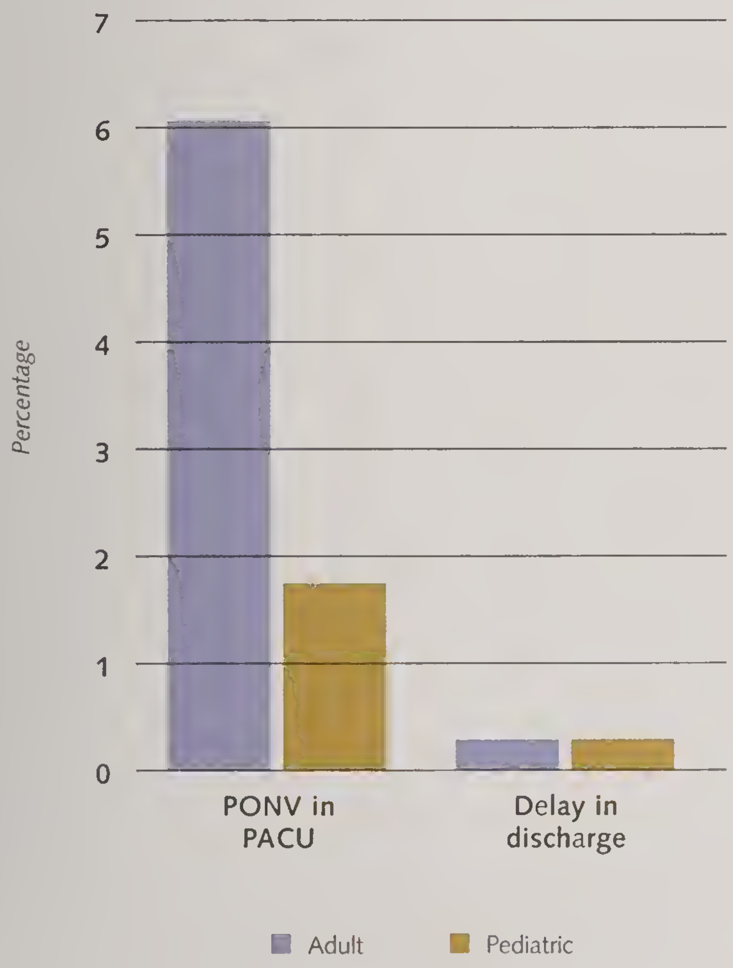


The Ophthalmology and Otolaryngology surgical volumes are split fairly evenly, and the numbers have been consistently rising over the last several years.

Adult versus Pediatric Volume



Postoperative Nausea and Vomiting (PONV) in the Post Anesthesia Care Unit (PACU)



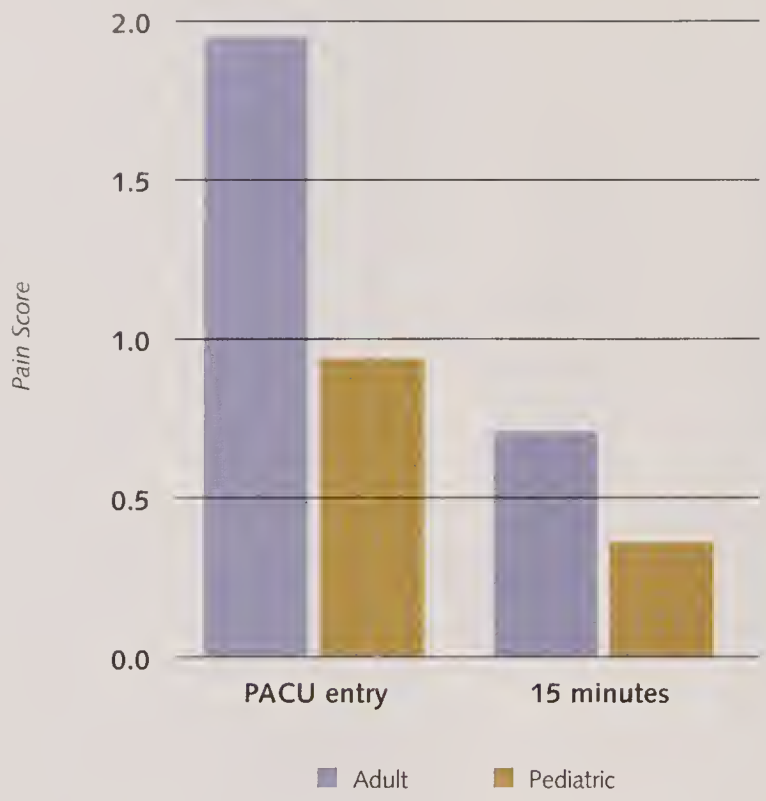
These numbers reflect patients who had nausea and/or vomiting in the PACU despite therapy in the operating room and required additional treatment to alleviate their discomfort. The delay in discharge criteria reported reflects the number of patients who continued to have prolonged nausea despite additional therapy. Typical reports of PONV range from 20-30% incidence.

The data reflect a sample subset of our total patient population who went through the recovery room. (N = 3,712 for adults and N = 2,203 for pediatric patients)

Mass. Eye and Ear cares for the most pediatric otolaryngologic patients in the area and for more pediatric surgical patients than any hospital except Children's Hospital Boston. Pediatric surgical volume has remained a little more than one-third of Mass. Eye and Ear's overall volume over the last few years.

Nausea is one of the most common and troublesome complications occurring after surgery in both pediatric and adult patients. Additionally, it is well known that patients undergoing ophthalmologic and otolaryngologic procedures are at significantly higher risk of postoperative nausea and vomiting (PONV) when compared to patients having other types of surgery. As a result, nearly every one of our patients receives prophylactic treatment with the latest combination of appropriate antiemetic medications in order to minimize the chances of PONV.

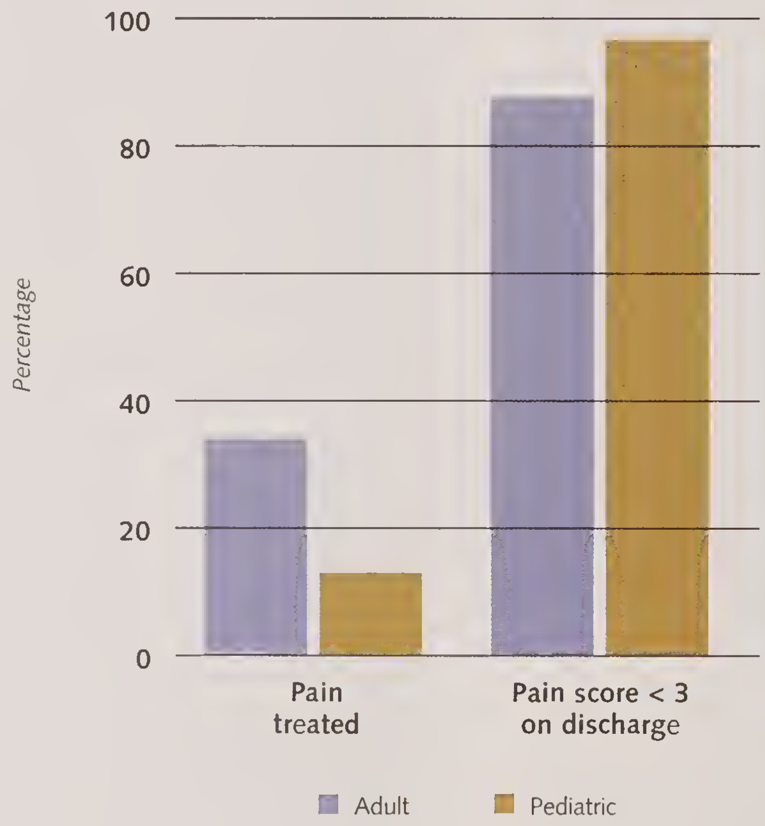
Pain Score in the PACU



Using these 0-10 scales, our goal is to treat pain above a '3' and discharge patients from the PACU with scores less than 3.

We report a sample subset of patients from 2010. (N = 3,274 for adults and N = 1,896 for pediatric patients.)

Treatment Success of Pain in the PACU



Using these 0-10 scales, our goal is to treat pain above a '3' and discharge patients from the PACU with scores less than 3.

We report a sample subset of patients from 2010. (N = 3,274 for adults and N = 1,896 for pediatric patients.)

Pain after surgery is one of patients' most common fears. Our goal is to have patients awaken in the operating room and arrive in the Post Anesthesia Care Unit (PACU) recovery room as comfortable as possible. Often in the recovery room, the patient ma need more analgesics prior to leaving. Our goal is to ensure that as many patients as possible leave this area either to home or to their hospital room comfortable.

We use a 10-point visual analog score for adults to self-report their pain. The scores reported above reflect the adults' perception of their own pain assessment and thei request for pain medications.

For pediatric patients old enough to assess their own scores, we use the same 10-point scale as used for adults. For patients too young to use the scale, the nurses in the PACU use the FLACC (Facial-Legs-Arms-Crying-Comfortable) scale that attributes behavioral characteristics to a 10-point pain scale. These are the scores reported above for pediatric patients.

Massachusetts Eye and Ear Infirmary

OPHTHALMOLOGY DEPARTMENT

At the Mass. Eye and Ear/Harvard Medical School Department of Ophthalmology, we have nearly two centuries of experience in developing innovative approaches to treating eye disease and reducing blindness worldwide. We founded subspecialty training in cornea, retina and glaucoma, and have pioneered tools and treatments for numerous diseases and conditions ranging from retinal detachment to age-related macular degeneration to corneal scarring. Our core values are patient-centered and focus on delivering the highest quality of care through education, innovation and service excellence.

MASS. EYE AND EAR DEPARTMENT OF OPHTHALMOLOGY

- Primary teaching hospital of Harvard Medical School's Department of Ophthalmology

- Home to Schepens Eye Research Institute, Retina Research Institute, Howe Laboratory of Ophthalmology, Berman-Gund Laboratory for the Study of Retinal Degenerations, and the Ocular Genomics Institute.

Clinical Affiliations

- Massachusetts General Hospital (MGH) Department of Ophthalmology
  - Mass. Eye and Ear provides comprehensive and subspecialty care, including Neuro-Ophthalmology consultations and coordination of inpatient consultations for urgent patient care concerns at MGH.
  - High-risk diabetes patients are screened by Mass. Eye and Ear staff for diabetic eye disease through the MGH Chelsea Health Center teleretinal screening program.
- Brigham and Women's Hospital (BWH)
  - Mass. Eye and Ear staff provides 24/7 eye trauma coverage and inpatient subspecialty care and consultations at BWH. A new, outpatient comprehensive ophthalmology service (One Joslin Place) provides follow-up care to BWH patients and is staffed by Mass. Eye and Ear physicians with participation from Joslin retina specialists.
- Children's Hospital Ophthalmology Foundation (CHOF)
  - Mass. Eye and Ear ophthalmologists provide subspecialty care in glaucoma and cornea disease at Children's Hospital Boston.
  - Children's ophthalmologists staff the comprehensive pediatric ophthalmology and strabismus clinic at Mass. Eye and Ear.

Ophthalmology Resources at Mass. Eye and Ear

- Full spectrum of primary and subspecialty ophthalmic care.
- Highly skilled ophthalmic teams staff each clinical area.
- Dedicated 24/7 eye emergency department.
- Mass. Eye and Ear Medical Unit, staffed by MGH physicians.
- Mass. Eye and Ear Radiology Department houses a dedicated MRI/CT imaging suite.
- Morse Laser Center provides advanced laser procedures using state-of-the-art refractive, glaucoma, retinal and anterior segment lasers.
- Ocular Surface Imaging Center enables rapid, non-invasive corneal biopsies.
- Electroretinography Service performs evaluations of patients with retinal disease referred for diagnosis, prognosis, genetic counseling and treatment.
- The David Glendenning Cogan Laboratory of Ophthalmic Pathology provides enhanced diagnostic services in conjunction with the Mass General Surgical Pathology Service.
- The Howe Library houses one of the most extensive ophthalmology research collections in the world.
- The International Program offers patients assistance with appointments, transportation, accommodations and language translation.
- Full service Contact Lens Service specializes in therapeutic fits, bandage and specialty contact lenses.
- Dedicated Social Work and Discharge Planning Department.

Academic Affiliations

Massachusetts General Hospita

Brigham and Women's Hospita

Beth Israel Deaconess
Medical Center

Joslin Diabetes Center/
Beetham Eye Institute

Children's Hospital Boston

Veterans Affairs Boston
Healthcare System

Togus, Maine Veterans'
Administration

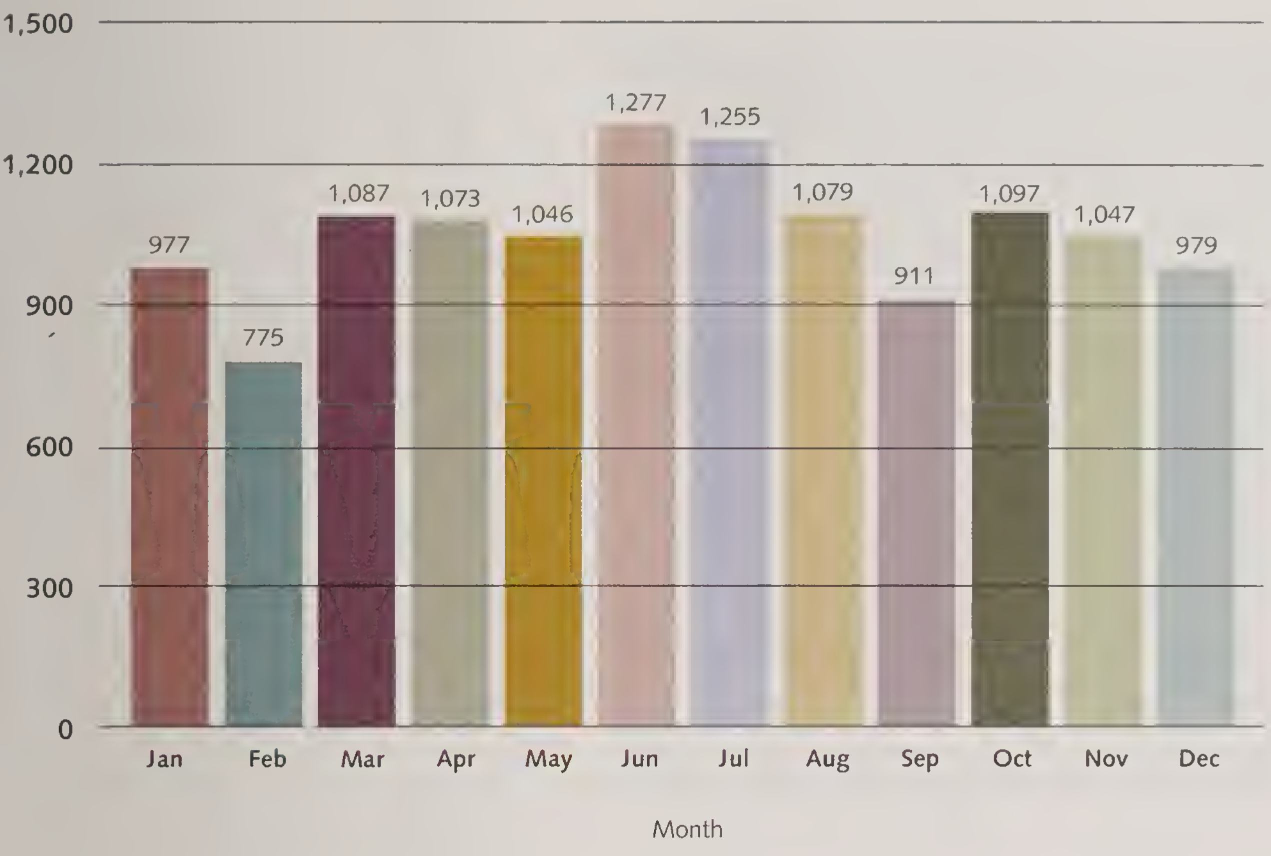
Aravind Hospital, India

Shanghai Eye and ENT Hospital

For more information about the Mass. Eye and Ear Quality Program or the Department of Ophthalmology, please visit our website at www.MassEyeAndEar.org.

Emergency Department: Ophthalmology Emergency Visits

January 2010 to December 2010

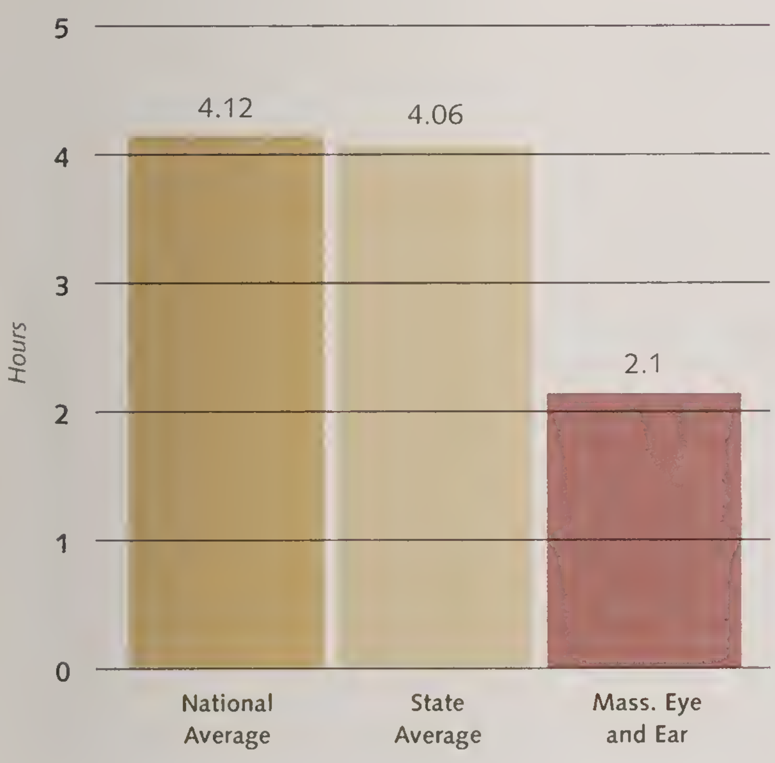


N = 12,603

This bar graph shows the number of ophthalmology patients seen monthly by the Emergency Department during a one-year period. Patient volume generally increases in the summer. The average number of patients seen each month was 1,050.

Emergency Department: Ophthalmology Visit Times

January 2010 to December 2010



N = 12,603

In 2010, the average ophthalmology visit time at the Mass. Eye and Ear Emergency Department was 2.1 hours. The average visit time is defined as the total time from when the patient arrived at the Emergency Department to when the patient walked out the door after having seen the ophthalmologist. According to the 2010 Press Ganey Emergency Department Pulse Report, patients in the United States spent an average of four hours and seven minutes (4.12 hours) in the Emergency Department. The Massachusetts (State) average visit time was 4.06 hours.

The average ophthalmology visit time in the Mass. Eye and Ear Emergency Department is almost half the average state and national visit times.

Eye Trauma Averted: Joe's Story

Joe Wright, the owner of a small construction company, was helping one of his workers remove a particularly stubborn nail when it shattered and struck him in the eye. He didn't know at the time that he was injured so severely he could potentially lose his vision.

When Joe's eye got worse despite treatment in his town, his wife, Heather, insisted he come to Boston and Mass. Eye and Ear's emergency room. A few hours later he was in an operating room having an open-globe injury repaired. Joe developed a cataract because of the trauma, which he also had removed at Mass. Eye and Ear.

"When faced with the reality that I could lose the vision in my eye, all I could think was 'how am I going to support my family?'" Joe said.

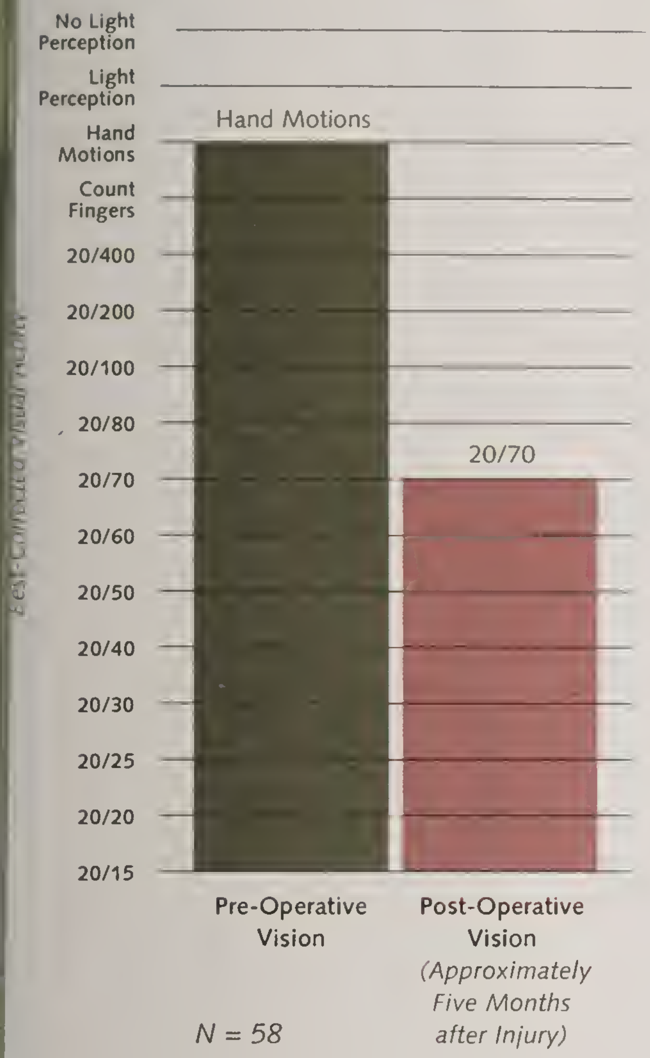
Today Joe has 20/20 vision in his injured eye, and he routinely wears safety glasses.

"When faced with the reality
that I could lose the vision i
my eye, all I could think was
'how am I going to support
my family?'"

— Joe Wright

Eye Trauma Surgery: Post-Operative Median Vision

January 2010 to December 2010



During a one-year period, 96 patients had open-globe repair by the Mass. Eye and Ear Eye Trauma Service. Of the 96 patients, visual acuity at presentation was recorded in 91 patients. Visual acuity was not possible in five patients: two were intubated at presentation, two suffered from dementia, and one was an infant. At the time of publication, 58 patients had five months or greater of follow-up, and only these individuals were analyzed for pre- and post-operative vision. Patients with less than five months of follow-up were excluded from the analysis.

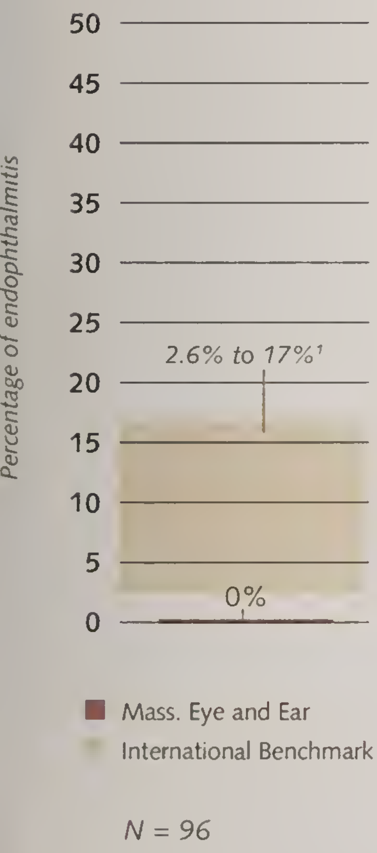
During the 2010 calendar year, the median pre-operative vision was "hand motions," and the median post-operative vision at the closest follow-up visit after five months was 20/70. Visual prognosis after ocular trauma is highly dependent on the severity of the initial trauma, but these data show that patients suffering from traumatic eye rupture can regain useful vision after surgery.

Reference: [1]Shah AS, Andreoli MT, Andreoli CM, Heidary G. "Pediatric open-globe injuries: A large scale, retrospective review," poster presented at the 37th Annual Meeting of the American Association for Pediatric Ophthalmology and Strabismus, San Diego, California, USA, March 30-April 3, 2011. Abstract available in J AAPOS 2011; 15(1). e29.

In a retrospective review of 124 pediatric open-globe injuries managed by the Eye Trauma Service and/or Retina Service between February 1999 and April 2009, analysis showed a median visual acuity at presentation of "hand motions" *(N = 123)*, and a final, best-corrected median visual acuity of 20/40 *(N = 124)* at ten months median follow-up.[1]

Eye Trauma Surgery: Rates of Endophthalmitis after Open-Globe Repair

January 2010 to December 2010



During a one-year period, 96 patients had open-globe repair by the Eye Trauma Service, with no cases of endophthalmitis reported.

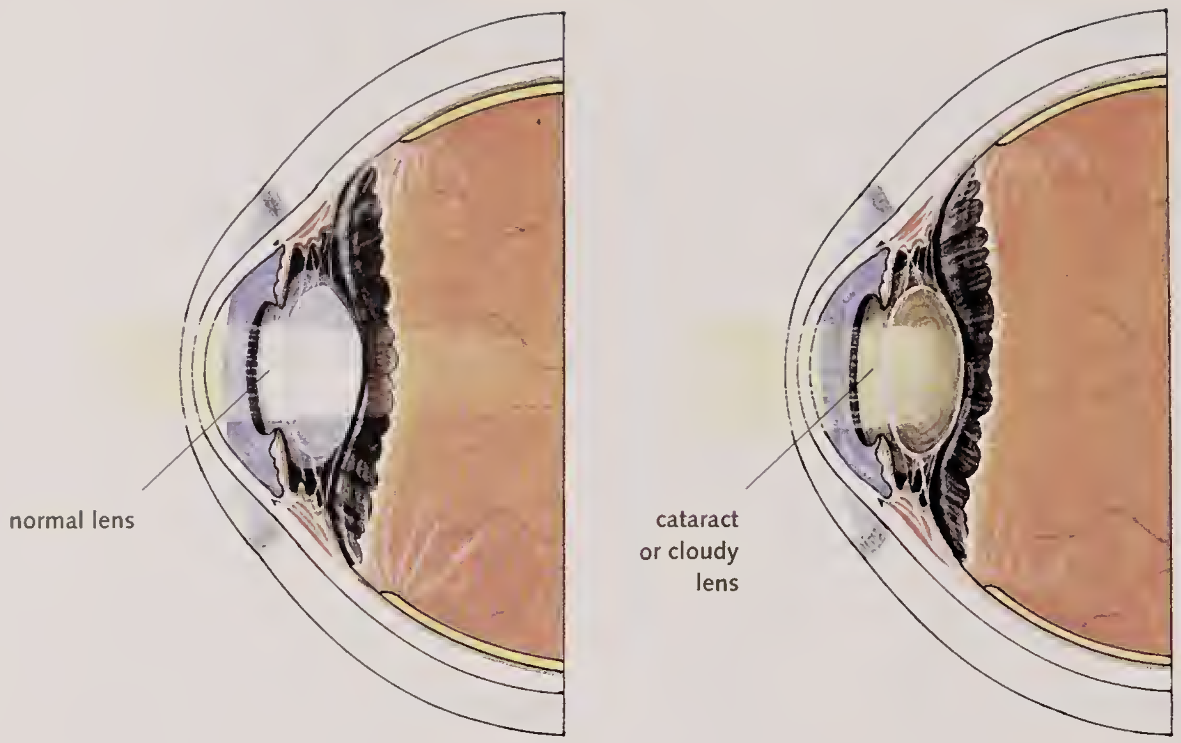
During a 7.5-year period (January 2000 to July 2007), 675 open-globe injuries were treated at Mass. Eye and Ear. Intravenous vancomycin and ceftazidime were started on admission and stopped after 48 hours. Patients were discharged on topical antibiotics, corticosteroids, and cycloplegia. Of these 675 eyes, 558 had at least 30 days of follow-up (mean, 11 months). The overall percentage of endophthalmitis was 0.9% (or 5/558 cases). Three were culture-positive cases, and two were culture-negative cases.[2]

The standard Mass. Eye and Ear protocol for eye trauma (i.e. surgical repair by a dedicated trauma team and 48 hours of intravenous antibiotics) is associated with post-traumatic endophthalmitis in fewer than one percent of cases. A review of the literature suggests that endophthalmitis rates around the world range from 2.6% to 17%. The United States National Eye Trauma Registry has reported an endophthalmitis rate of 6.9% after open-globe repair.[2]

Reference: [2]Andreoli CM, Andreoli MT, Kloek CE, Ahuero AE, Vavvas D, Durand ML. Low rate of endophthalmitis in a large series of open globe injuries. Am J Ophthalmol 2009, 147. 601-608.

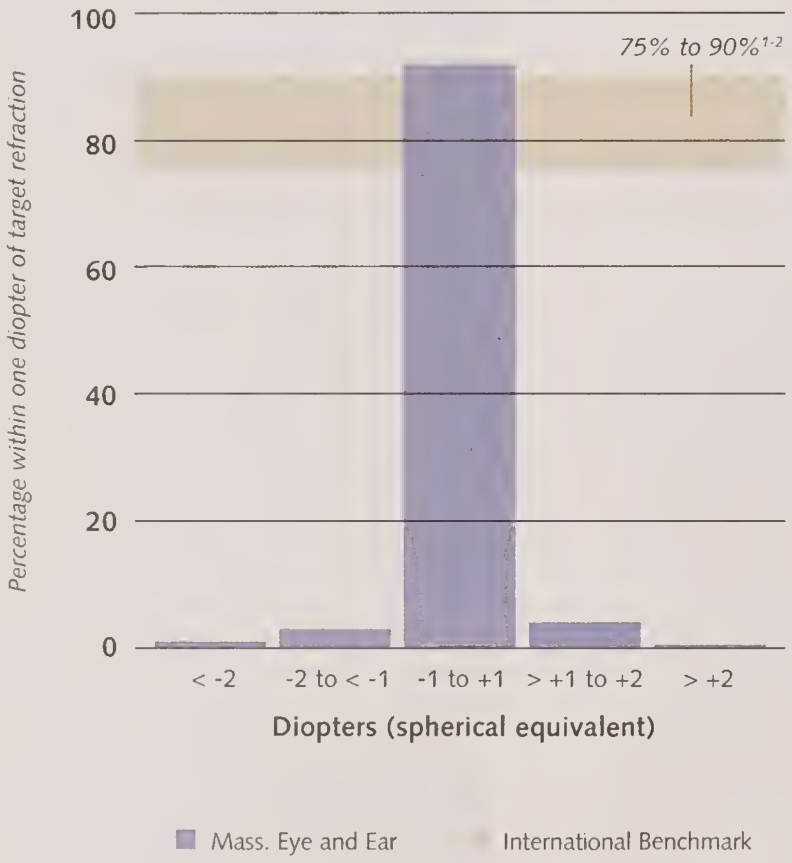
Endophthalmitis rates after eye trauma surgery performed at Mass. Eye and Ear are the lowest rates reported in the country. Based on the Mass. Eye and Ear experience and the low percentage of cases with endophthalmitis, we recommend that institutions adopt a standardized protocol for treating open-globe injuries and consider the use of prophylactic systemic antibiotics.[2]

Cataract Surgery



Achieving Target Refraction (Spherical Equivalent)

January 2010 to December 2010



N = 1,285

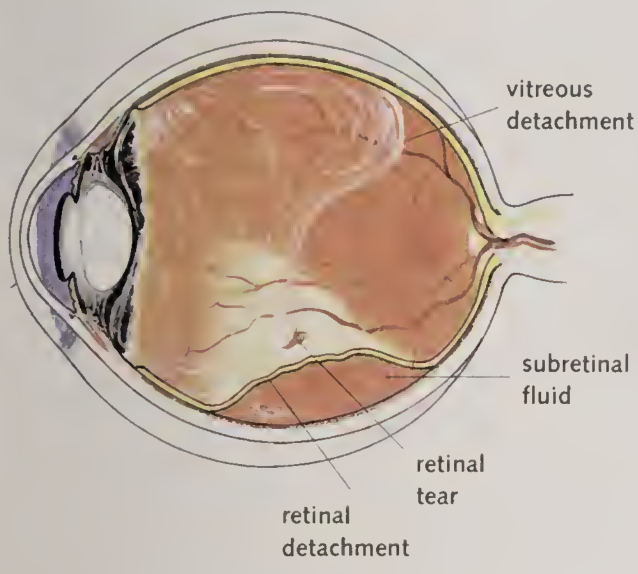
During a one-year period, the Comprehensive Ophthalmology Service performed cataract surgery on 1,369 eyes at the Mass. Eye and Ear main Boston campus. This chart depicts the results of 1,285 eyes that had one month of follow-up data.

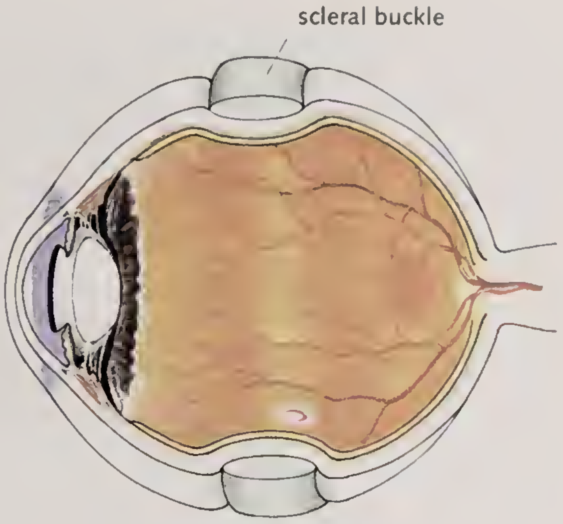
References: [1]Kugelberg M, Lundström M. Refractive outcome after cataract surgery. Cataract and Refractive Surgery Today Europe, May 2009. [2]Cole Eye Institute. Outcomes 2008.

The Comprehensive Ophthalmology and Cataract Consultation Service at Mass. Eye and Ear provides a full spectrum of integrated patient care, from annual eye exams and continued ophthalmology care, to subspecialty referrals. The most common surgery that we perform is cataract extraction with intraocular lens implantation.

Ninety-three percent of cataract patients achieved within one diopter of target refraction after cataract surgery. In summary, Mass. Eye and Ear cataract surgery results exceed international benchmarks.

Retinal Detachment and Retinal Detachment Repair

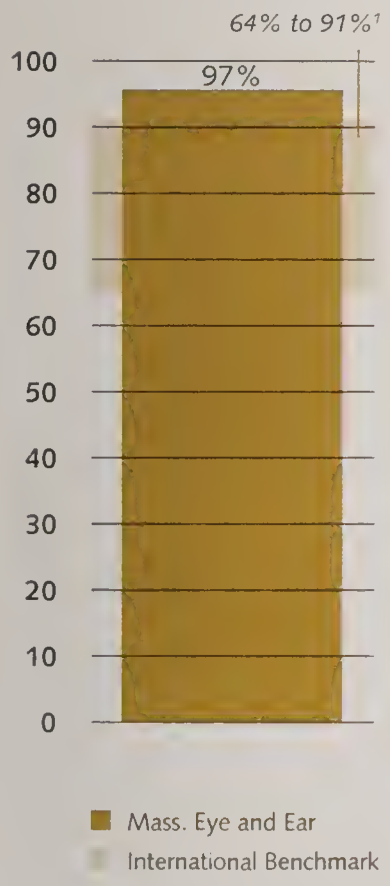




The Retina Service at Mass. Eye and Ear is one of the largest subspecialty groups of its kind in the country. Our physician scientists are highly skilled at diagnosing and treating a full range of ocular diseases, including macular degeneration, diabetic retinopathy, retinal detachments and ocular tumors.

Retina Surgery: Retinal Reattachment Rate at Six Months for Primary Rhegmatogenous Retinal Detachment

January 2010 to December 2010



N = 63

Primary rhegmatogenous retinal detachment is one of the most common retinal conditions that require a major operation by the Mass. Eye and Ear Retina Service. Of the 621 major operations performed on 312 patients by the Retina Service during the 2010 calendar year, this analysis includes only operations for primary rhegmatogenous retinal detachments. Exclusion criteria included non-rhegmatogenous retinal detachments, retinal detachments of unclear mechanism, rhegmatogenous retinal detachments in the setting of open-globe injuries, eyes with prior vitreoretinal surgery, and eyes with proliferative vitreoretinopathy. This left 63 eyes for analysis.

Retinal reattachment was successfully achieved in 97% (61/63) of patients age 18 or older with a primary rhegmatogenous retinal detachment and no history of previous retinal surgery. One or more techniques may have been used for retinal repair and included pars plana vitrectomy, scleral buckle, and pneumatic retinopexy. A review of the literature suggests that the primary success rate of rhegmatogenous retinal detachment repair ranges from 64% to 91%.[1]

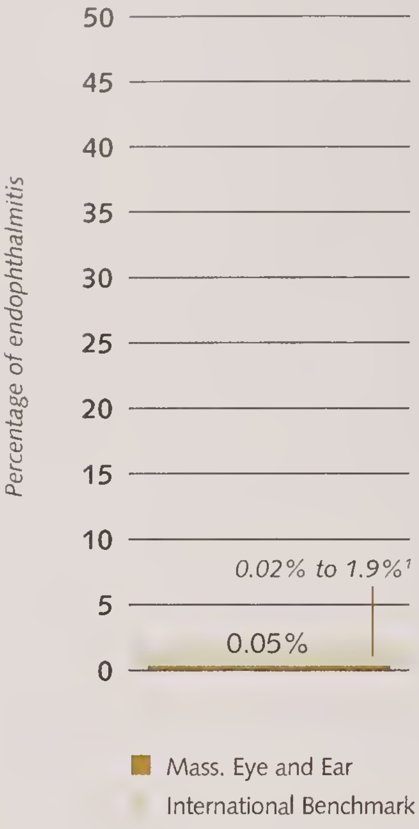
Reference: [1]Wickham L, Bunce C, Wong D, Charteris DG. Retinal detachment repair by vitrectomy: simplified formulae to estimate the risk of failure. Br J Ophthalmol 2011 Feb 16.

Ninety-seven percent of primary rhegmatogenous retinal detachment patients achieved surgical success.

The Mass. Eye and Ear Retina Service has some of the highest success rates for rhegmatogenous retinal detachment repair in the country.

Retina Surgery:
Rates of Endophthalmitis after Intravitreal Injection

January 2010 to December 2010



N = 2,191

In order to identify cases of acute endophthalmitis, a retrospective review was performed of all consecutive eyes that underwent intravitreal injections from January 1, 2007 to December 31, 2010. During the 48-month study interval, 7,585 intravitreal injections were performed. Of these injections, 2,191 took place during the 2010 calendar year, with only one reported case of endophthalmitis (0.05%).

Over a four-year period, the overall incidence rate of endophthalmitis subsequent to intravitreal injection was 0.04% (three of 7,585 injections). In one case of acute endophthalmitis, the patient presented three days after the injection. Bacterial cultures revealed coagulase-negative Staphylococcus species. Treatment of the infection resulted in a best-corrected visual acuity at 19 months follow-up of 20/25 (baseline 20/30). In the second case, the patient presented four days after the injection. Gram stain showed moderate bacteria, but cultures were negative. After treatment, best-corrected visual acuity at two years follow-up was 20/50–1 (baseline 20/32-2). In the third case, the patient presented with delayed onset endophthalmitis one month after the injection. Vitreous culture showed moderate Staphylococcus epidermidis, and an anterior chamber tap revealed no growth. After treatment, visual acuity with correction at seven months follow-up was 20/30+2 (baseline 20/25).

Reference: [1]Bhavsar et al. Risk of endophthalmitis after intravitreal drug injection when topical antibiotics are not required. Arch Ophthalmol 2009; 127(12): 1581-1583.

In conclusion, acute endophthalmitis is a rare potential complication of intravitreal injections. The Mass. Eye and Ear intravitrea injection infection rate is one of the lowest reported in the literature.

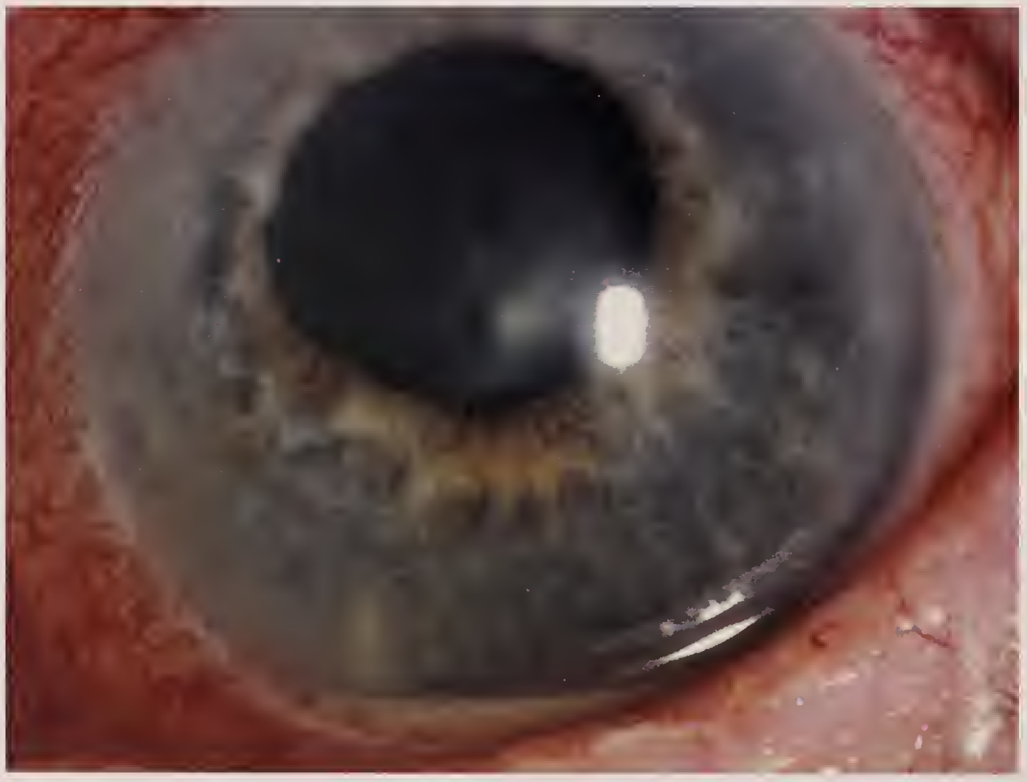


photo courtesy of Lucy H. Young, M.D., Ph.D., F.A.C.S.

(left) photograph of endophthalmitis

Personalized Glaucoma Surgery Saves Sight

Years after having glaucoma surgery, Fran Hall is doing well. To celebrate her 80th birthday in 2007, Fran jumped from a wharf in Nahant, Mass., with her three sons. Pictured from left: David Hall, Fran Hall, Gordy Hall, and Max Hall.

One of the most active octogenarians you'll ever meet, Fran Hall works professionally as a psychotherapist, skis in the winter, plays tennis year-round, sings in a chorus, restores furniture and participates in a book club. Even more incredible, Fran maintains this lifestyle 15 years after she was first diagnosed with glaucoma and several years after sight-saving surgery at Mass. Eye and Ear.

Glaucoma is the second leading cause of blindness in the United States and the leading cause for people of African and Latino descent. The cause of glaucoma is unknown. There is no cure, but personalized treatment and surgery can help extend vision.

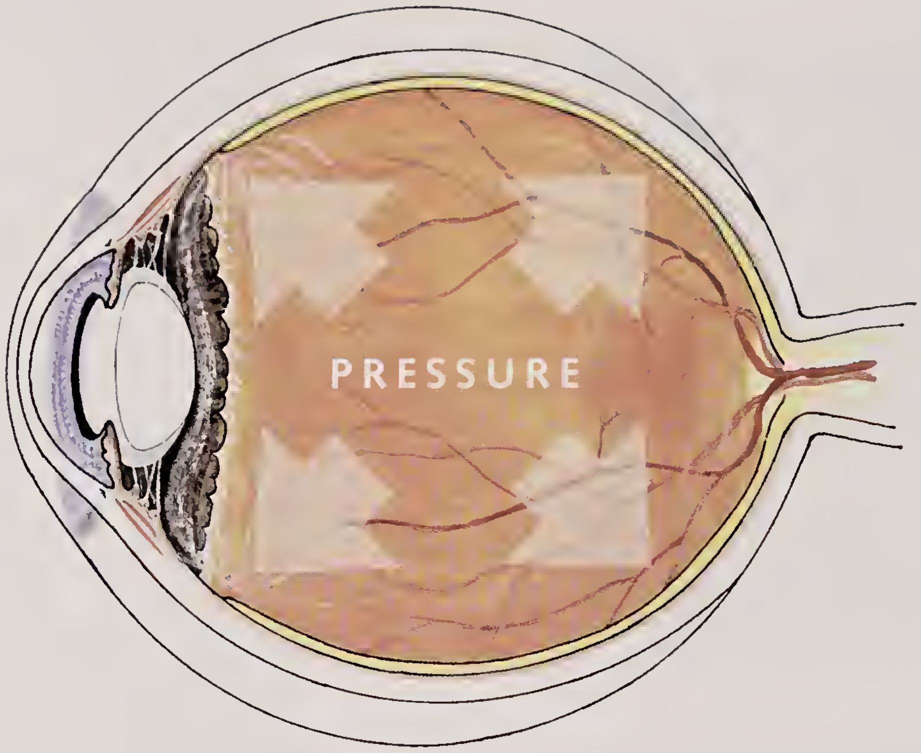
Fran knows the importance of individualized care first-hand. She controlled glaucoma pressure in her eyes for more than a decade with medicated eye drops and laser treatments. But the pressure in both of Fran's eyes continued to rise and the treatments gradually became less effective. Her ophthalmologist referred her to glaucoma specialist, Dr. Douglas Rhee.

Since the traditional surgical procedure to treat glaucoma, called a trabeculectomy, would have meant approximately two months of inactivity for Fran, Dr. Rhee suggested the trabectome procedure to her.

The surgery was performed and as expected, Fran's recovery time was short and she was back on the court swinging her tennis racket in no time. The pressure in both of Fran's eyes remains under control.

"I'm one happy camper," she says.

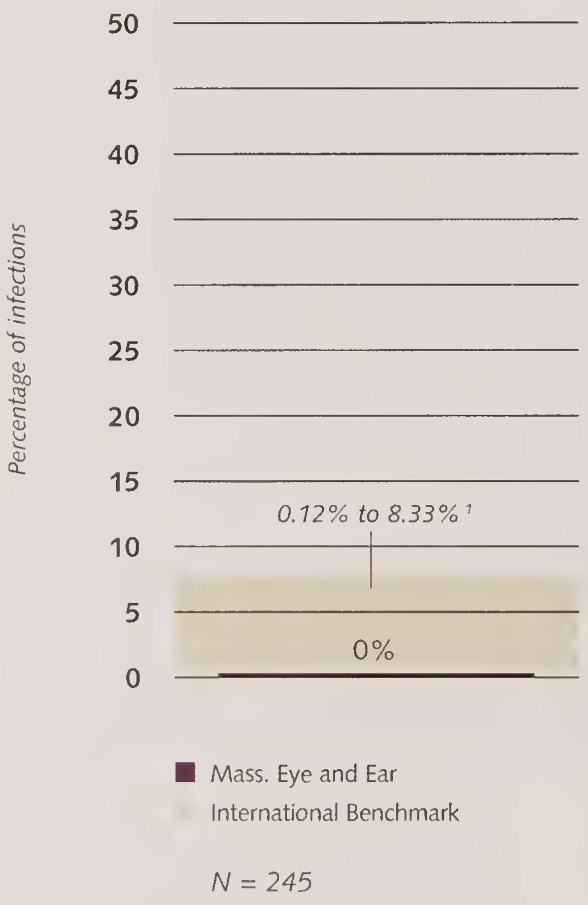
Glaucoma Surgery



Glaucoma is a group of disorders in which the main risk factor is high eye pressure within the eye. All glaucoma disorders are characterized by vision loss caused by damage to the optic nerve, which provides the pathway from the eyeball to the brain. The Mass. Eye and Ear Glaucoma Consultation Service can perform a wide range of lase and surgical procedures.

Trabeculectomy and Tube Shunt Infection Rates

January 2010 to December 2010



The most common incisional surgeries performed by the Mass. Eye and Ear Glaucoma Consultation Service are trabeculectomy surgery and tube shunt surgery. Trabeculectomy surgery is the gold standard incisional surgery that is usually performed first in patients who require glaucoma surgery.

During a one-year period, the Glaucoma Consultation Service performed trabeculectomy surgery (with or without previous scarring) on 104 eyes and performed tube shunt surgeries (primary or revision) on 141 eyes. Zero cases of endophthalmitis were reported.

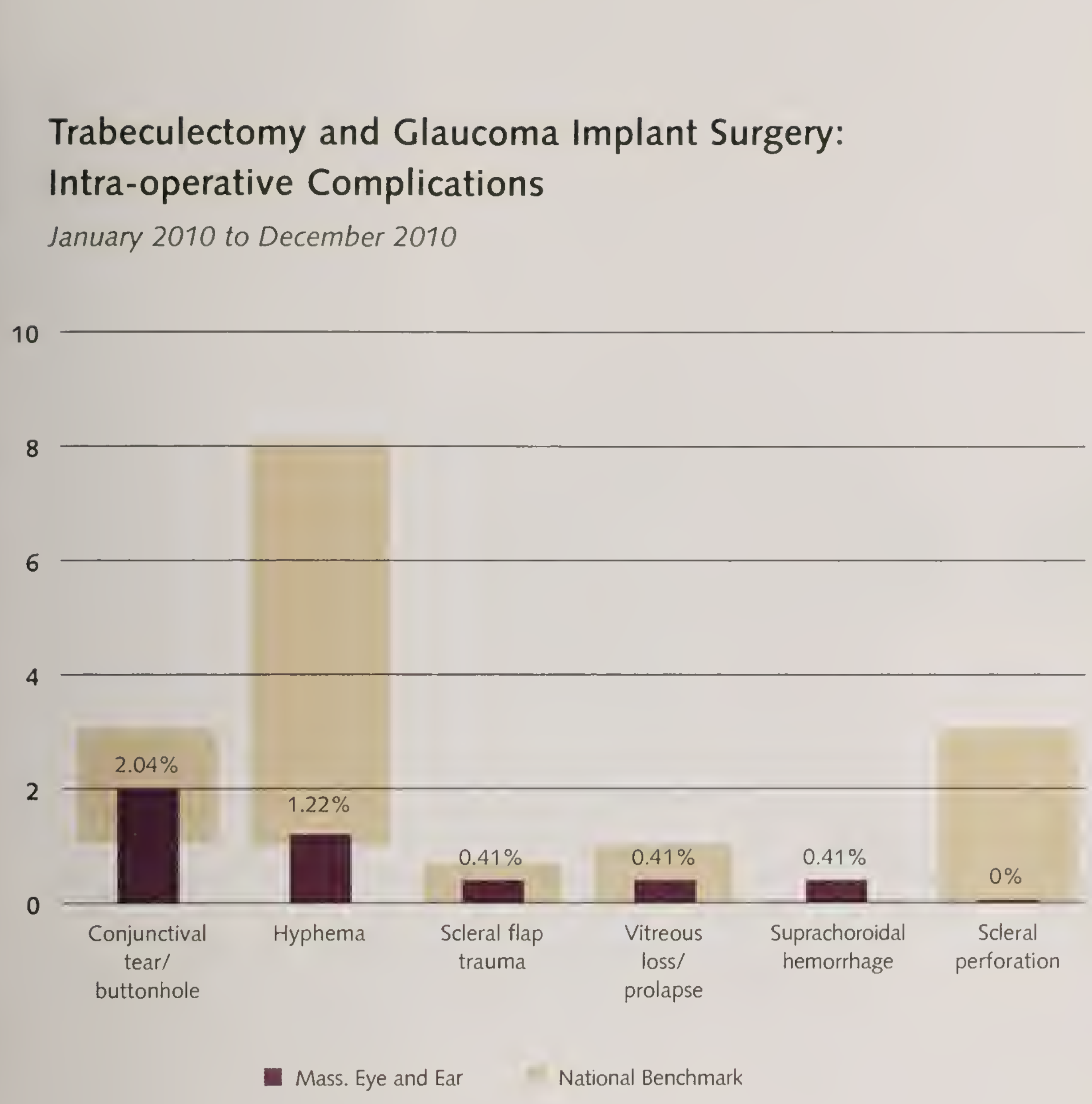
Complete success is defined as a zero percent infection rate per year. A review of the literature suggests that trabeculectomy and tube shunt infection rates range from 0.12% to 8.33%.[1]

Reference: [1]Ang GS, Varga Z, Shaarawy T. Postoperative infection in penetrating versus non-penetrating glaucoma surgery. Br J Ophthalmol 2010; 94: 1571-1576.

In summary, the Mass. Eye and Ear Glaucoma Consultati Service has one of the lowest trabeculectomy and tube shun infection rates reported in the literature.

Trabeculectomy and Glaucoma Implant Surgery: Intra-operative Complications

January 2010 to December 2010



Of the 245 cases of trabeculectomy surgery or glaucoma implant surgery over a one-year period, 95.5% of patients had no intra-operative complications.

The Mass. Eye and Ear Glaucoma Consultation Service has some of the lowest intra-operative complications rates reported in the literature.

The 245 cases evaluated included:
96 trabeculectomies without scarring
8 trabeculectomies with previous scarring
140 primary tube surgeries
1 tube revision

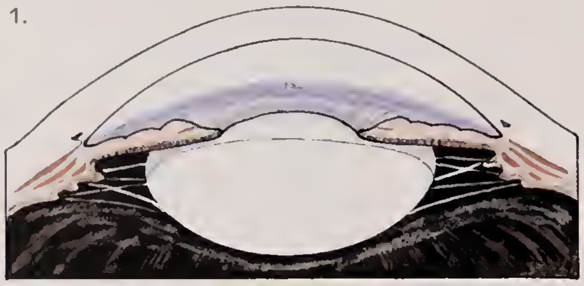
Mass. Eye and Ear Complication Rates:
Conjunctival tear/buttonhole: 2.04%
Hyphema: 1.22%
Scleral flap trauma: 0.41%
Vitreous loss (vitreous prolapse): 0.41%
Suprachoroidal hemorrhage: 0.41%
Scleral perforation: 0%

National Benchmarks:[1-3]
Conjunctival tear/buttonhole: 1.1% - 3%
Hyphema: 1% - 8%
Scleral flap trauma: 0.7%
Vitreous loss (vitreous prolapse): 1%
Suprachoroidal hemorrhage: 0%
Scleral perforation: 0% - 3%

References: [1]Barton K, Gedde SJ, Budenz DL, Feuer WJ, Schiffman J. The Ahmed Baerveldt Comparison Study: methodology, baseline patient characteristics, and intra-operative complications. Ophthalmology 2011; 118(3): 435-442. [2]Jampel HD, Musch DC, Gillespie BW, Lichter PR, Wright MM, Guire KE. Perioperative complications of trabeculectomy in the Collaborative Initial Glaucoma Treatment Study (CIGTS). Am J Ophthalmol 2005; 140(1): 16-22. [3]Gedde SJ, Herndon LW, Brandt JD, Budenz DL, Feuer WJ, Schiffman JC. Surgical complications in the tube versus trabeculectomy study during the first year of follow-up. Am J Ophthalmol 2007; 143(1): 23-31.

Refractive Surgery

1.



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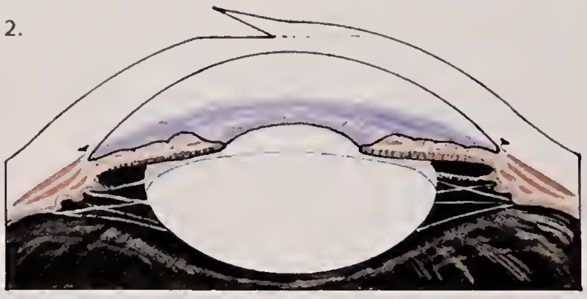

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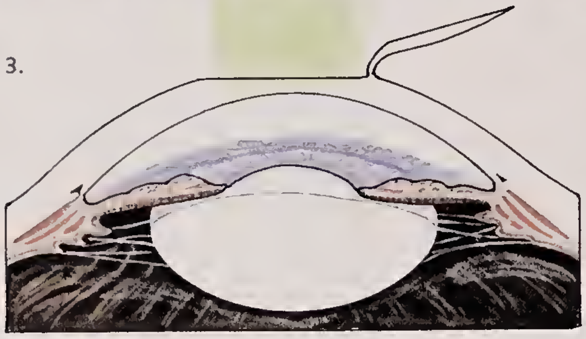

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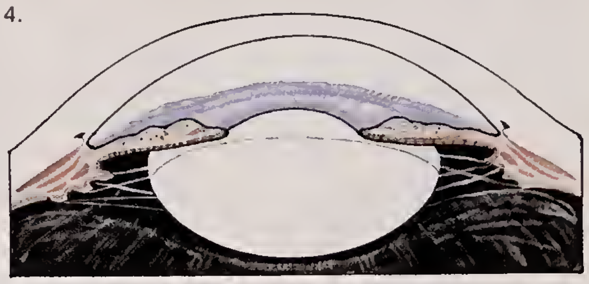
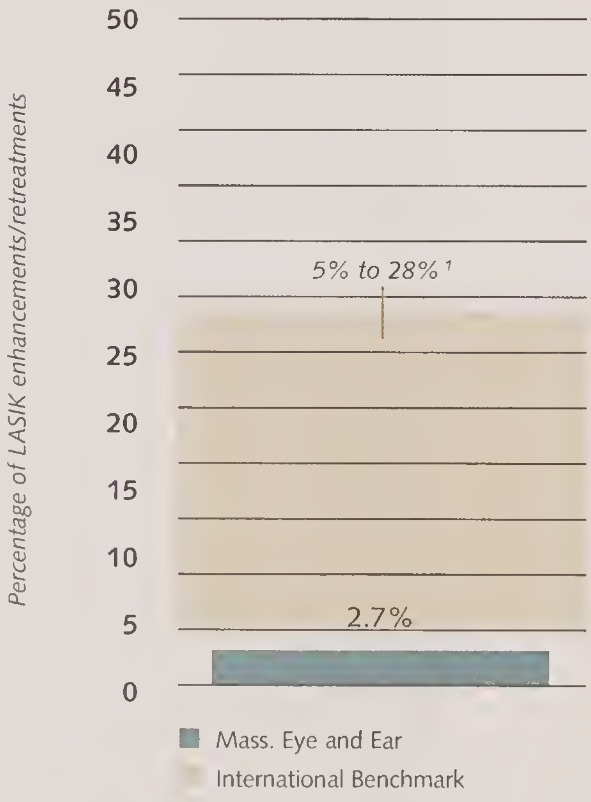


Refractive surgery, commonly known as laser vision correction, is a term given to surgical procedures designed to correct certain visual problems such as myopia (nearsightedness), hyperopia (farsightedness), and astigmatism. The Mass. Eye and Ear Cornea and Refractive Surgery Service offers a number of refractive procedures, the most common of which are LASIK (laser-assisted in situ keratomileusis) and PRK (photorefractive keratectomy).

Enhancement/Retreatment Rates at Six Months Follow-up

January 2010 to December 2010



N = 296

Of the 296 eyes that had LASIK during the one-year study period, 2.7% (8/296) had an enhancement/retreatment procedure within six months.

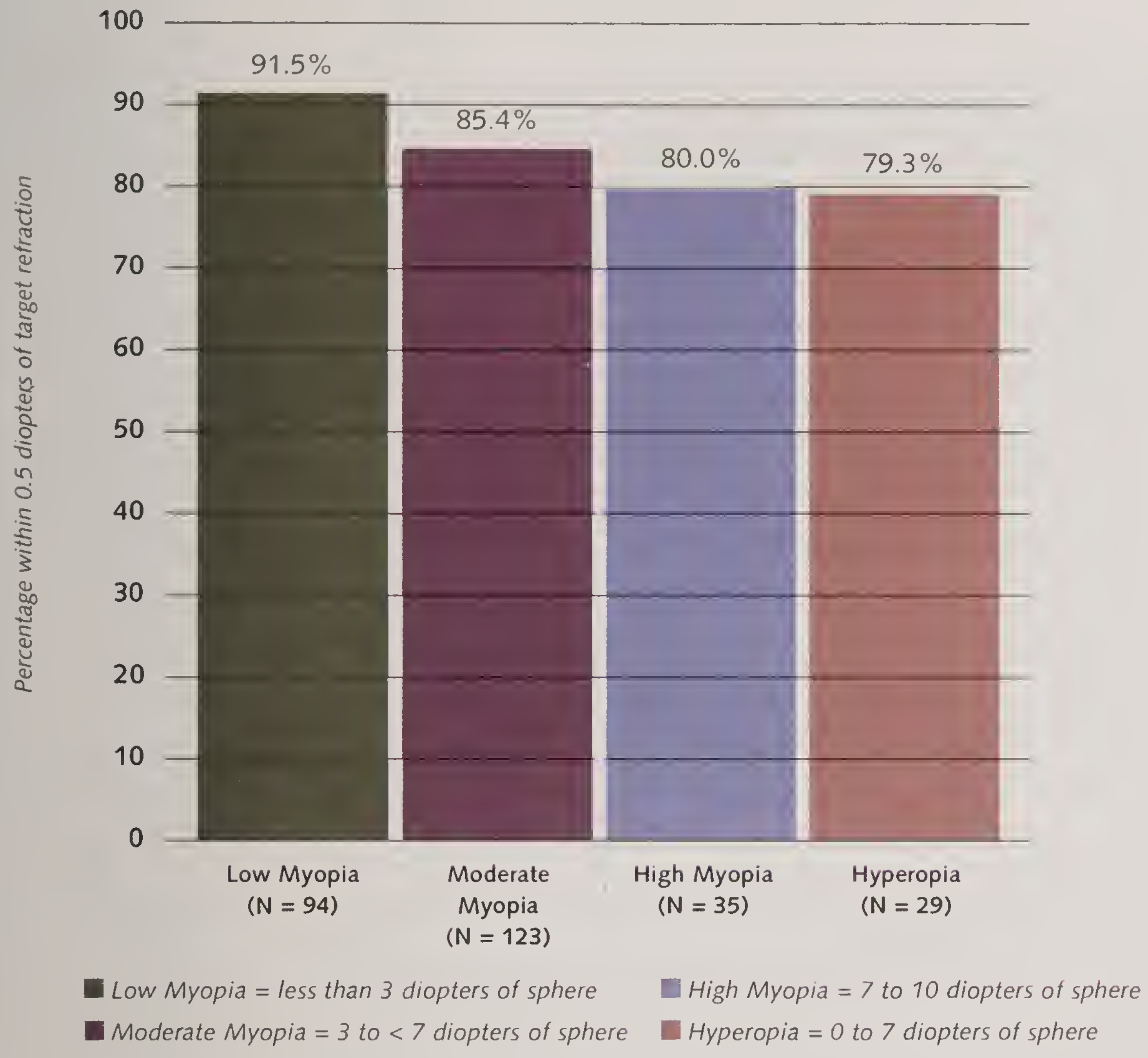
LASIK retreatment rates of between 5% and 28% have been reported in the literature.[1]

Reference: [1]Hersh PS, Fry KL, Bishop DS. Incidence and associations of retreatment after LASIK. Ophthalmology 2003; 110(4): 748-754.

The Mass. Eye and Ear Cornea and Refractive Surgery Service has some of the lowest enhancement/retreatment rates after LASIK surgery in the country.

Refractive Surgery LASIK: Achieving Target Refraction (Spherical Equivalent)

January 2010 to December 2010



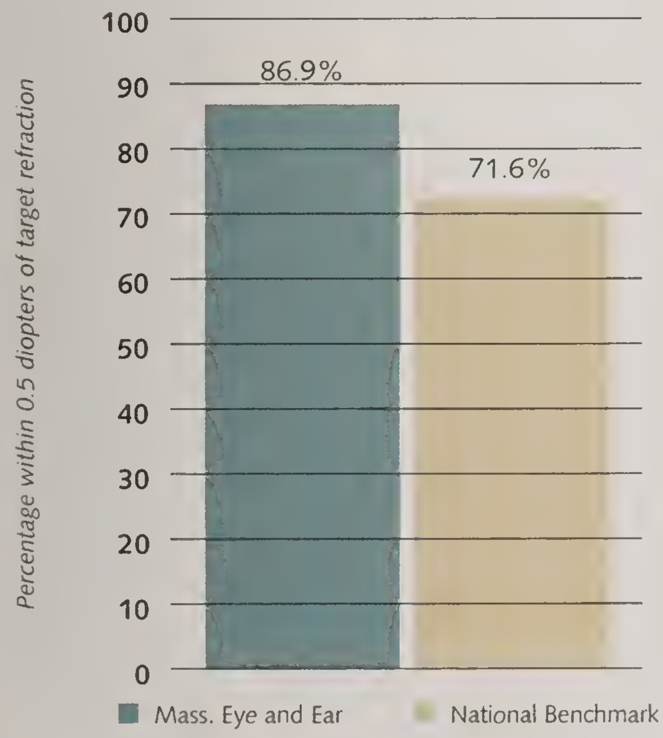
N = 281

Of the 296 eyes that had LASIK surgery during the one-year study period, 281 had sufficient follow-up data for analysis. These data are the results after LASIK at one month follow-up for myopia and at three months follow-up for hyperopia.

The overall LASIK success rate for achieving within 0.5 diopters of target refraction was 86.1% (242/281 eyes). The success rate was 86.9% for myopia (219/252 eyes) and 79.3% (23/29 eyes) for hyperopia.

Surgical Success Rates for LASIK for Myopia

January 2010 to December 2010



N = 252

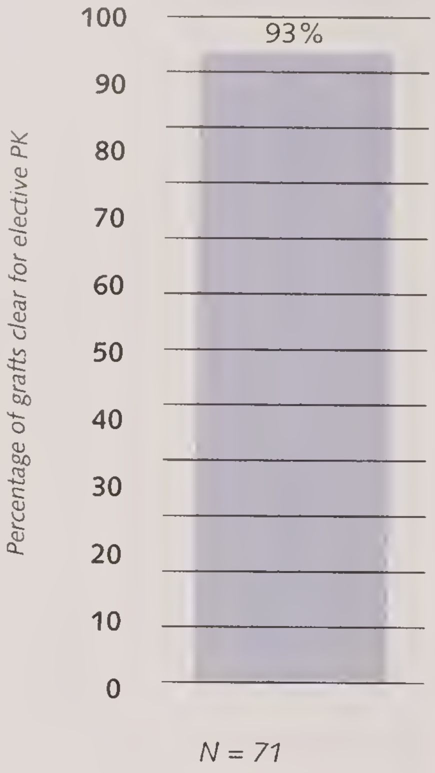
National benchmark data from FDA trials for LASIK for myopia showed that 71.6% of eyes resulted in a refractive error within ±0.50 diopters of the target correction.[1]

Reference: [1]Bailey MD and Zadnick K. Outcomes of LASIK for myopia with FDA-approved lasers. Cornea 2007; 26(3), 246-254.

The Mass. Eye and Ear Cornea and Refractive Surgery Service exceeds national benchmarks for success rates after LASIK surgery.

Cornea Surgery: Clear Corneal Grafts for Penetrating Keratoplasty (PK) at Three Months Follow-up

January 2010 to December 2010



Cornea transplant surgery provides clear cornea tissue from a donor to replace diseased host tissue.

Of the 169 corneal transplant surgeries performed at the Mass. Eye and Ear during a one-year period, 112 (66%) were full thickness cornea transplants, also called penetrating keratoplasties. Of the 97 penetrating keratoplasties for which sufficient follow-up data is available for analysis, 71 (73%) were elective and 26 (27%) were non-elective. Non-elective penetrating keratoplasties include those performed emergently (e.g. for corneal perforation or severe microbial keratitis unresponsive to medical therapy) and those done in combination with complex (e.g. retinal or glaucoma) surgeries. This analysis was limited to *elective* penetrating keratoplasties, which included first time grafts in uninflamed host beds as well as those performed in eyes at high risk of rejection. Indications for routine penetrating keratoplasty included Fuchs' endothelial dystrophy, keratoconus, prior failed graft, and corneal scar.

References: [1]Vail A, Gore SM, Bradley BA, Easty DL, Rogers CA. Corneal graft survival and visual outcome: a multicenter study. Ophthalmology 1994; 101(1), 120-127. [2]Williams KA, Lowe M, Bartlett C, Kelly TL, Coster DJ. Risk factors for human corneal graft failure within the Australian corneal graft registry. Transplantation 2008; 86(12), 1720-1724. [3]Sugar A, et al. Recipient risk factors for graft failure in the Cornea Donor Study. Ophthalmology 2009; 116(6), 1023-1028.

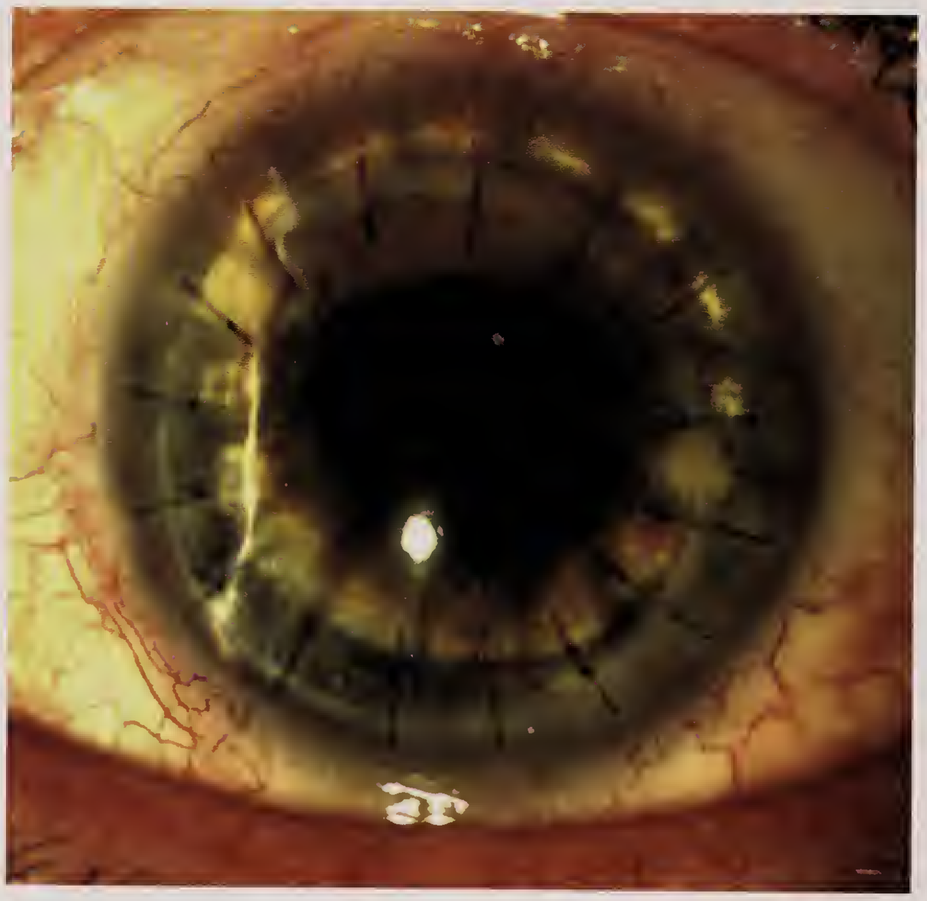


photo courtesy of Pedram Hamrah, M.D.

Ninety-three percent of the elective penetrating keratoplasties performed by the Mass. Eye and Ear Cornea and Refractive Surgery Service during a one-year period achieved surgical success, which is defined as a clear cornea at three months follow-up. This is comparable to reported rates in the literature.[1-3]

(left) photograph after PK surgery

Massachusetts Eye and Ear Infirmary

OTOLARYNGOLOGY DEPARTMENT

The Department of Otolaryngology at Mass. Eye and Ear is committed to the highest level of care for patients facing problems related to the ears, nose, throat, head, and neck. As Otolaryngology encompasses a comprehensive range of subspecialties, our services include but are not limited to hearing and ear disorders, pediatric otolaryngology, head and neck cancer, voice impairment, thyroid and parathyroid surgery, and facial nerve disorders. This specialized, collaborative approach from our internationally-renowned team of physicians significantly contributes to the excellent outcomes they achieve for their patients.

While each of our physicians is board certified in Otolaryngology by the American Board of Otolaryngology, many hold additional board certification in other areas of specialty. Many are also fellowship-trained, furthering their expertise in these subspecialty areas. Our team combines highly specialized training, expert care, and compassion in the medical management and/or surgical treatment of patients with ear, nose, and throat problems.

With such a diverse range of specialties offered within the Department of Otolaryngology, one of our greatest advantages is the opportunity for all our specialists and subspecialists to work in close proximity to one another, and to collaborate in the diagnosis and coordination of complex treatment plans of their patients. Other areas of Department collaboration include:

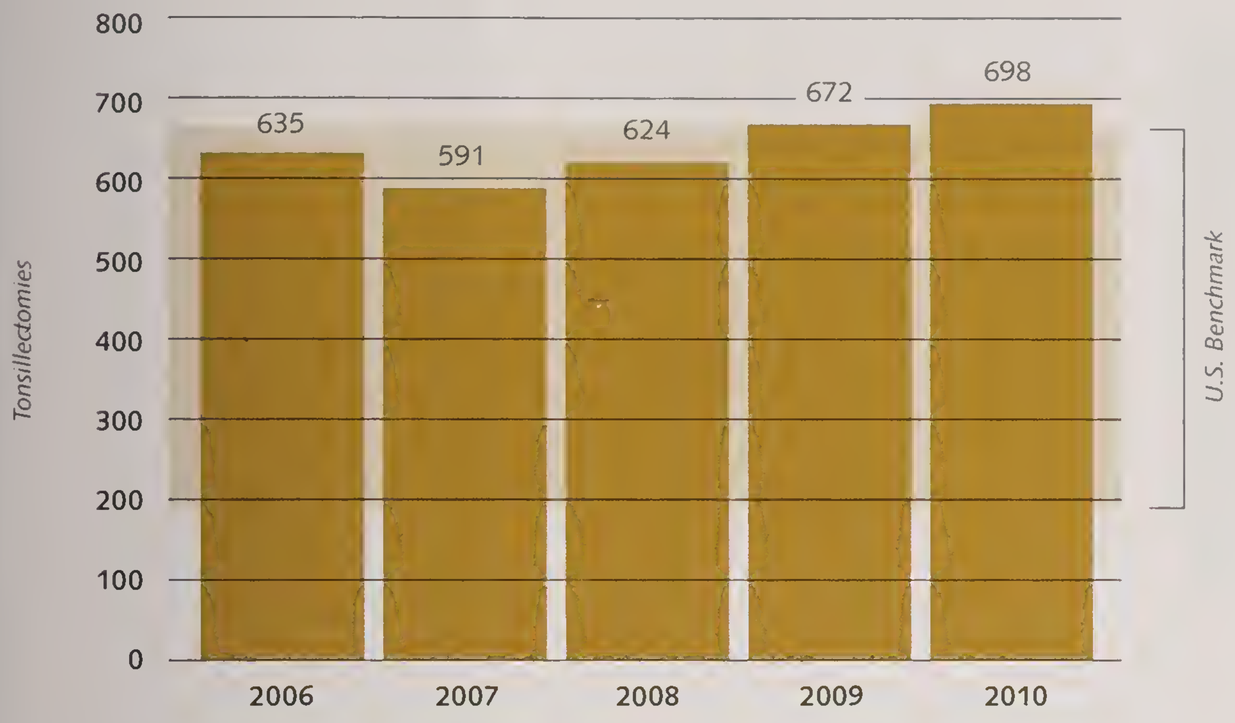
- **Primary teaching hospital of Harvard Medical School's Department of Otolaryngology**

- **Home to Eaton-Peabody Laboratory, Jenks Vestibular Lab, Cochlear Implant Research Lab, Otopathology Lab, and Temporal Bone Consortium Temporal Bone Registry**

Clinical Affiliations
- Massachusetts General Hospital Department of Otolaryngology
- Brigham and Women's Hospital: Otology

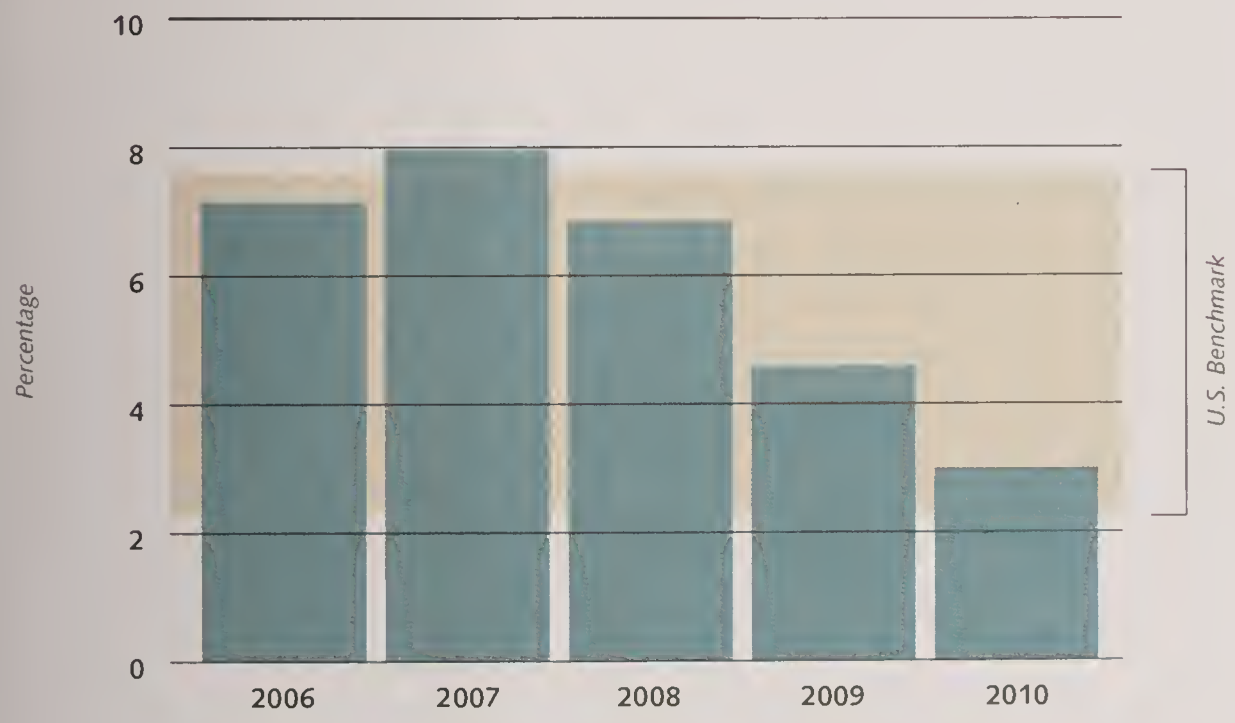
Academic Affiliations
- Massachusetts General Hospital
- Brigham and Women's Hospital
- Beth Israel Deaconess Medical Center
- Children's Hospital Boston

Pediatric Otolaryngology
Tonsillectomies



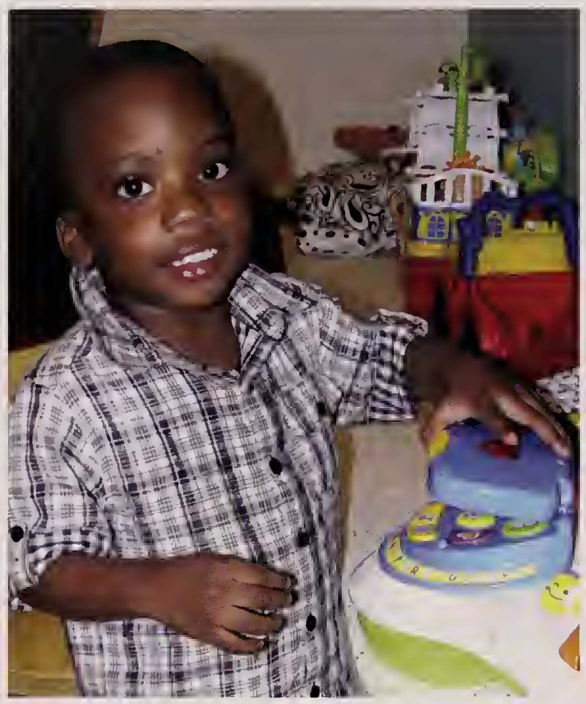
Tonsillectomies with or without adenoidectomy performed at the Mass. Eye and Ear each year by full-time staff members.

Pediatric Otolaryngology
Post-Tonsillectomy Hemorrhage Rates



These percentages represent children undergoing tonsillectomy or tonsillectomy & adenoidectomy who then needed to return to the emergency department (ED) for evaluation for possible post-operative bleeding. These cases may have had silver nitrate treatment in the ED, but they did not require cautery in an operating room setting. The U.S. benchmark for ED evaluation for bleeding after these procedures is 2.2 - 7.8%.

Breathing Easier and Thriving



Francisca Fetuga didn't get a good night's sleep for the first two years of her son's life. She would listen to her son's labored breathing while he slept and worry. His sleep apnea, periods during sleep where he would stop breathing altogether, was alarming. Two-year-old Adekanmi wasn't able to eat solid food, or speak, either. Francisca expressed her concerns to her local pediatrician, but her fears were brushed aside.

Adekanmi's issues became so dire that in October 2010, he was brought to the emergency department at Mass General Hospital, where he was soon referred to Dr. Christopher Hartnick, Mass. Eye and Ear Director of Pediatric Otolaryngology.

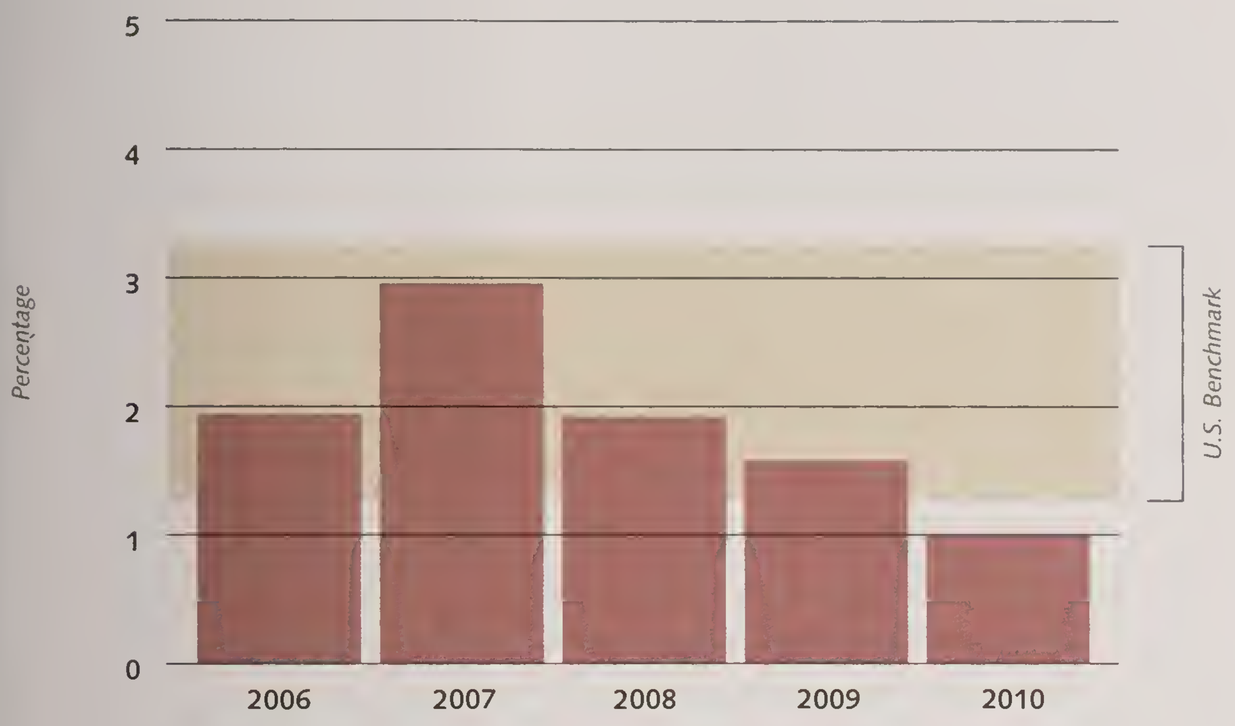
After performing a direct laryngoscopy, Dr. Hartnick and his team immediately spotted the problem. They could see that Adekanmi's tonsils and adenoids were so swollen that they were blocking his airway. Dr. Hartnick performed an immediate adenotonsillectomy — removal of the adenoids and tonsils that were preventing him from eating, and breathing normally.

After surgery, Adekanmi recovered in Mass General's pediatric intensive care unit, where clinicians closely monitored his respiration and oxygen saturation, and watched closely for any other possible post-surgical complications.

Days after his operation, Adekanmi began eating solid food. Soon he was starting to speak. Today Adekanmi is doing well. "Now he sleeps with ease," says Francisca. "He is making such good progress. He is so much happier — and making so much noise!" she says.

> **"Now he sleeps with ease," says Francisca. "He is making such good progress. He is so much happier — and making so much noise!"**
>
> **— Francisca Fetuga**

Pediatric Otolaryngology
Post-Tonsillectomy Hemorrhage Rates



These percentages represent children undergoing tonsillectomy or tonsillectomy & adenoidectomy who then developed tonsil bleeding severe enough to require a return to the operating room (OR) for surgical treatment. The U.S. benchmark for OR intervention after these procedures is 1.3 - 3.3%.

Pediatric Otolaryngology
Pediatric Airway Checklist

Errors in transfer of care are communication deficiencies that can have an adverse effect on a patient's surgical recovery and overall health. Effective and clear communication that is understood by all providers translates to a decreased potential for inadvertent harm to patients. Hospitals have recognized that communication errors between providers are a major contributor to medical errors. We are always trying to find processes that can be improved. We recognized that our team's communication when transferring care between providers could further be optimized so as to avoid possible errors in patient management.

From July 1, 2009 to October 1, 2009, a total of 33 pediatric airway patients sought coordinated care between MEEI and MGH pediatric intensive care units. Two critical respiratory emergencies occurred during this time period. Following these emergencies, a focus group was formed with the goal of improving post-operative information transfer so that future complications can be avoided. The checklist was implemented and over a 12 month observation period there were no adverse events related to the omission of key information during pediatric airway patient transfer (See Table 1).

The checklist offers many unprecedented benefits. Various providers felt that the checklist made the transfer more efficient as the questions were answered at the time of transfer, rather than through multiple messages and phone calls after the transfer had occurred. They also found the centralized location in the electronic medical record to be very helpful. An unforeseen benefit of the checklist being available electronically is its accessibility by the emergency department staff when discharged patients presented unexpectedly.

Patients Observed Following Checklist Implementation
Coordinated Care Airway Patients of MEEI and Pediatric Intensive Care Unit over a 12 Month Period

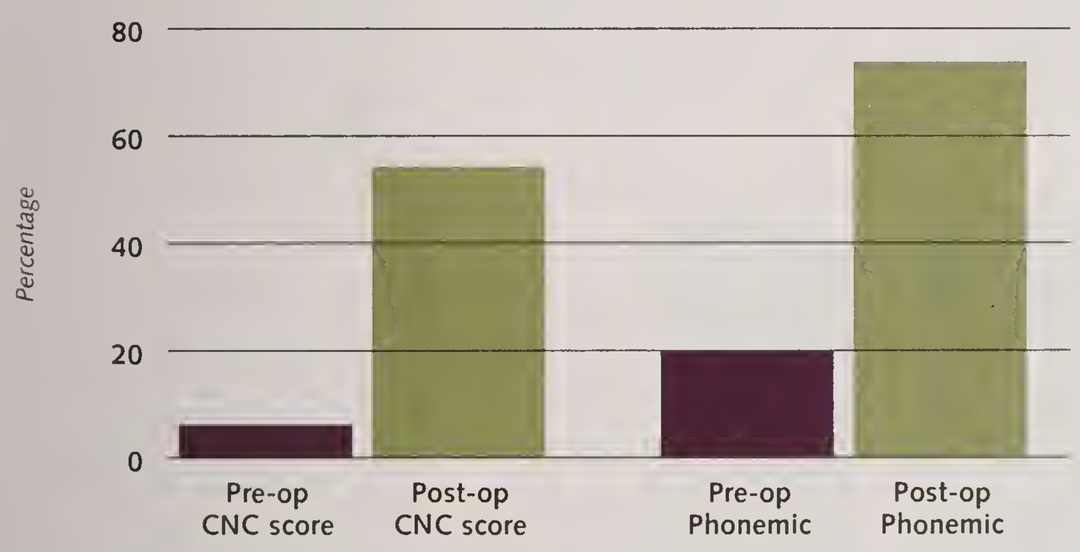
Patients with Airway Problems	93
Nonsurgical Airway Patients	36
Surgical Airway Patients	57
Tracheotomy	17
Laryngotracheal Reconstruction	14
Tracheoplasty	5
Tonsillectomy/Adenoidectomy for Severe OSA	10
Juvenile Nasopharyngeal Angiofibroma Resection	1
Balloon Dilation for Subglottic Stenosis	3
Choanal Atresia Repair	3
Tracheal Resection	1
Laryngeal Cleft Repair	2
Tracheoesophageal Fistula Repair	1

Otology
Cochlear Implant Outcomes

Between 2008 and 2010, adult cochlear implant patients were evaluated at Mass. Eye and Ear. All implant recipients included in this analysis initally presented with postlingual hearing loss and received post-implant speech perception testing more than five months after surgery. There were no permanent facial nerve injuries or cases of meningitis associated with cochlear implant surgery performed by full-time faculty at Mass. Eye and Ear.

The consonant-nucleus-consonant (CNC) test is used before and after implantation to assess word understanding through the perception of single syllable words in quiet. A higher score correlates with improved speech perception. Our data demonstrate CNC and phonemic word score improvement in adults of all ages with severe-to-profound acquired deafness. The benefits that our cochlear implant patients report after surgery include: 1) More effective oral communication at home and at work, 2) Ability to use the telephone, and 3) Overall improved quality of life.

Adult Cochlear Implant Outcomes 2008-2010



Total Patients (2008-2010)	72
Patients with Post-op Permanent Facial Nerve Injury	0
Patients with Post-op Transient Delayed Facial Nerve Weakness	1

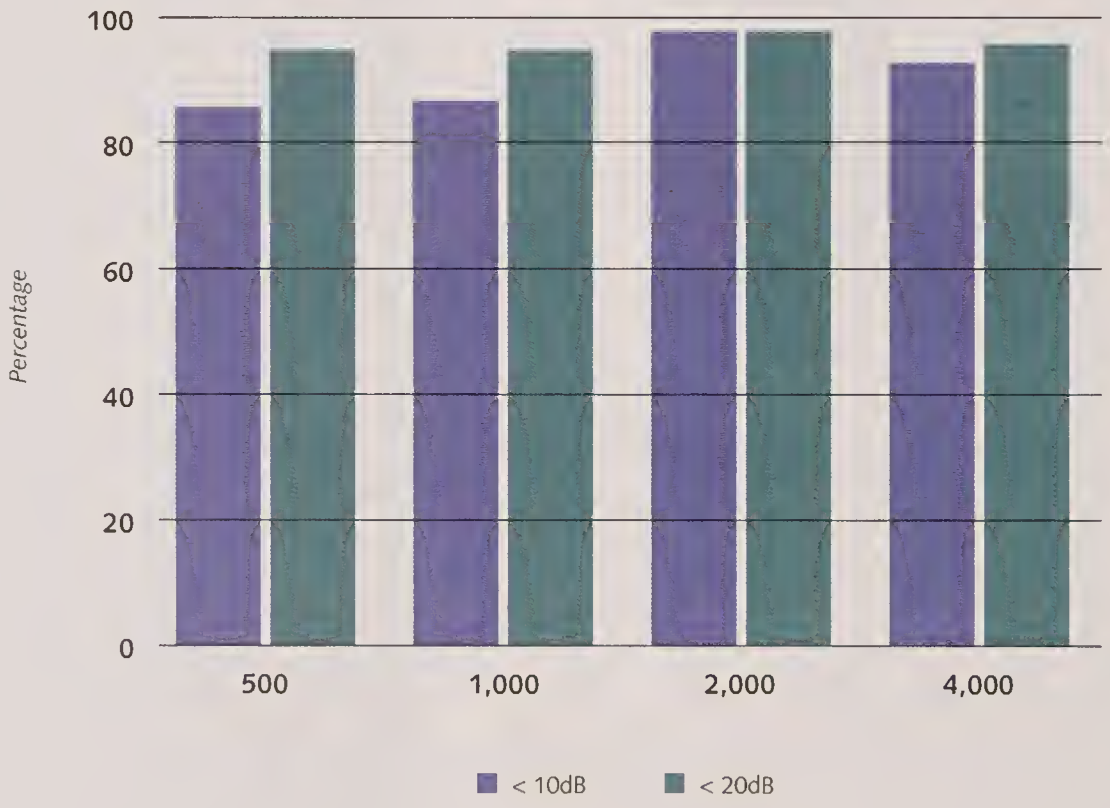
CNC Test: During a consonant-nucleus-consonant test, an audiologist measures the patient's ability to recognize a series of three-letter words such as "hat" and "car." The CNC score represents the percentage of full words correctly recognized. The phonemic score is the percentage of phonemes, or parts of each word, correctly recognized.

Otology
Stapedectomy Outcomes

There are three ossicles (hearing bones) in the middle ear that vibrate in response to sound. In patients who suffer from otosclerosis, an abnormal, microscopic growth of bone in the walls of the inner ear causes the third ossicle, called the stapes (or "stirrup") to be fixed or frozen in place. Normally, the stapes moves freely to allow the transmission of sound into the inner ear, but in otosclerosis the stapes cannot vibrate, resulting in hearing loss. These patients will often report difficulty with conversational speech at normal speaking levels while speaking to family or friends that becomes worse in social settings.

Stapedectomy surgery involves the removal of the diseased stapes bone using a specialized laser and replacement with an implant to restore hearing. Outcomes are measured by comparing the "air-bone gap" seen on hearing testing before and after surgery. The air-bone gap is the difference between nerve sensitivity (hearing potential) and what the patient actually hears. In patients with otosclerosis, sound vibrations are blocked by the immobile stapes bone, resulting in a large air-bone gap. The goal of the surgery is to improve sound conduction for the patient, closing the air-bone gap. The better the reconstruction, the smaller the air-bone gap seen after surgery.

Closure of Preoperative Air-Bone Gap



A patient with hearing thresholds of better than 20 decibels (dB) will report significant improvements in communication. In 2009, 97 patients underwent primary stapedectomy surgery. Of these patients, 98% showed hearing improvement. Table 1 shows the percentages of those 97 patients with closure of the preoperative air-bone gap to within 10dB or better and to within 20dB or better. There were no dead ears following stapedectomy surgery.

Head and Neck
Free Flap Reconstruction Outcomes

With increasing surgical volume and institutional experience, free flap reconstruction has transitioned from an extraordinary to an ordinary procedure. A ten-year study of free flap reconstruction from 1999 to 2009 shows that patients undergoing free flap reconstruction are increasingly older and have more medical issues that put them at higher risk for complication. However, despite these challenges, increased efficiency and teamwork stemming from accumulated institutional experience has lead to decreased operative times (see Table 4), shorter length of stay (see Table 4), a decline in complication rates (see Table 3), and increased overall success rates.

- Total operating room time was reduced from 12 hours to 9 hours through an emphasis on efficiency, standardization of equipment and procedures, and coordinated teamwork (Table 4).
- The incidence of free flap loss has been significantly reduced. Medical consultation has become part of the routine post-operative pathway for free flap patients, which may help limit medical complications (Table 3).
- We are still caring for patients with a wide assortment of cancer types (Table 2), but we have significantly improved the types of free flaps used to reconstruct the surgical deficits and have therefore greatly improved functional outcomes.
- Length of stay has been reduced from 14 to 9 days through the implementation of post-operative care pathways, with early intervention to ancillary services such as speech and swallow therapy, physical therapy, and case management (Table 4).

Free flap reconstruction involves transplanting a piece of tissue (skin, muscle, and bone) and its blood supply to another part of the body. This surgical method is used to rebuild tissue that had to be surgically removed. The blood vessels are reconnected to blood vessels in the head and neck region or near the reconstructed site.

Table 1. Patient Characteristics (Demographic and Comorbidity)

	1999 (N = 39)	2009 (N = 81)	P value
Age (mean)	58.4	61.4	.2
	No. (%)	No. (%)	
Male	24 (61.5)	60 (74.1)	.202
Female	15 (38.5)	21 (25.9)	
ASA 1	4 (10.2)	0 (0.0)	
ASA 2	30 (76.9)	51 (63.0)	
ASA 3	5 (12.8)	30 (37.0)	.009
Cardiac Disease	4 (9.8)	28 (34.6)	.0045
Diabetes	2 (5.1)	9 (11.1)	.503
Prior Radiation	21 (53.8)	39 (48.1)	.697

Table 2. Case Characteristics (Defect and Donor Site)

	1999 (N = 39) No. (%)	2009 (N = 81) No. (%)
Tumor Site/Type		
Oral Cavity SCCa	15 (38.5)	41 (50.6)
Oropharynx SCCa	3 (7.7)	6 (7.4)
Larynx SCCa	5 (12.8)	8 (9.9)
Hypopharynx SCCa	0 (0.0)	3 (3.7)
Sinonasal SCCa	2 (5.1)	4 (4.9)
Skin SCCa	1 (2.6)	8 (9.9)
Other	15 (38.5)	11 (13.6)
Flap Donor Site		
Radial Forearm	17 (43.6)	60 (74.1)
Fibula	10 (25.6)	10 (12.3)
Rectus	8 (20.5)	0 (0.0)
Iliac Crest	3 (7.7)	0 (0.0)
Latissimus	1 (2.6)	1 (1.2)
Anterolateral Thigh	0 (0.0)	7 (8.6)
Scapula	0 (0.0)	3 (3.7)

We are still caring for patients with a wide assortment of cancer types (Table 2), but we have significantly improved the types of free flaps used to reconstruct the sugical deficits and have therefore greatly improved functional outcomes.

Table 3. Surgical and Medical Complication Rates

Complication	1999 (N = 39) No. (%)	2009 (N = 81) No. (%)	P value
Return to OR	12 (30.8)	14 (17.3)	.103
Hematoma	4 (10.2)	13 (16.0)	.577
Flap Loss	5 (12.8)	2 (2.5)	.036
Fistula	8 (20.5)	13 (16.0)	.611
Wound Infection	9 (23.1)	14 (17.3)	.466
Medical Complication	7 (17.9)	11 (13.6)	.589

The incidence of free flap loss has been significantly reduced. Medical consultation has become part of the routine post-operative pathway for free flap patients, which may help limit medical complications (Table 3).

Head and Neck
Free Flap Reconstruction Outcomes

Table 4. Comparison of Total OR Time, EBL, and Length of Stay

	Total OR Time (hours)	Estimated Blood Loss (cc's)	Length of Stay (days)
1999 (N = 39)			
Mean	12.24	472	19.87
Median	12	500	14
Range	7-20.5	200-1,250	6-140
2009 (N = 81)			
Mean	8.98	370	10.79
Median	9	300	9
Range	5.5-12	100-1,800	6-50
Mean Difference	3.26	102	9.08
P Value	< .001	.079	< .001

Total operating room time was reduced from 12 hours to 9 hours through an emphasis on efficiency, standardization of equipment and procedures, and coordinated teamwork (Table 4).

Facial Nerve Outcomes
Platysmectomy

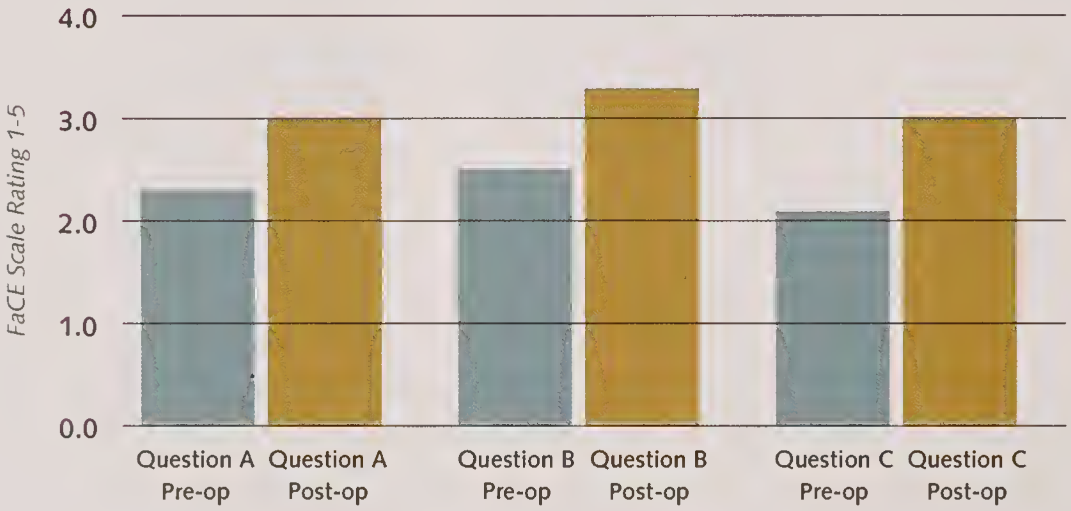
Hyperactivity of the platysma muscle in the neck is a common, bothersome condition related to aberrant regeneration of the facial nerve following an episode of facial paralysis. Patients may experience spasms or uncomfortable tension of this muscle. Patients who experience significant benefits following a trial of botox chemodenervation therapy may benefit from a more permanent intervention. The platysmectomy has demonstrated increased quality of life in patients suffering from platysmal hyperactivity due to facial paralysis.

The following statements from the FaCE survey are relevant to the platysmectomy procedure. Patients were asked to respond to the statements with one of five answers, "1. all of the time," "2. most of the time," "3. some of the time," "4. a little of the time," or "5. none of the time." Increasing scores represent an improvement in quality of life.

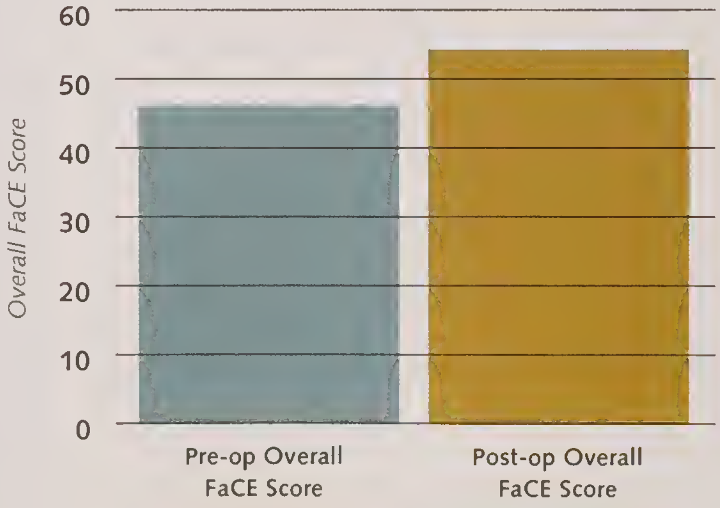
Question A. Parts of my face feel tight, worn out, or uncomfortable.
Question B. When I try to move my face, I feel tension, pain, or spasm.
Question C. My face feels tired, or when I try to move my face, I feel tension, pain, or spasm.

The FaCE (Facial Clinimetric Evaluation) survey is used to measure quality of life issues in patients with facial paralysis. 21 patients who underwent the platysmectomy procedure between October 2009 and August 2010 completed both pre- and post-operative FaCE surveys. Their collective answers indicate a significant improvement in quality of life post-operatively.

Improvement in FaCE Scores Following Platysmectomy



Note: Increasing scores represent an improvement in quality of life.



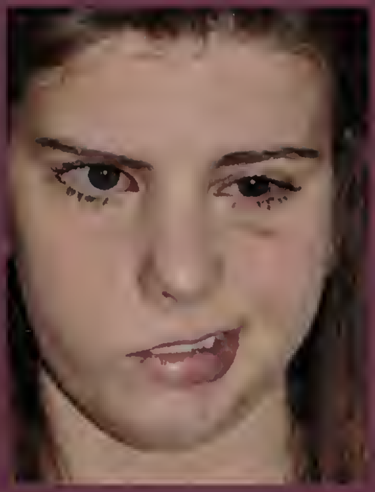
Facial Nerve Outcomes
Pediatric Gracilis Surgery

Free gracilis muscle transfer for facial reanimation is a surgical intervention that can benefit both adults and children who suffer from dense facial paralysis with no chance of spontaneous recovery. The procedure may offer these patients improved commisure excursion when smiling, which is a quality of life improvement for patients of all ages, but especially for those of the pediatric population.

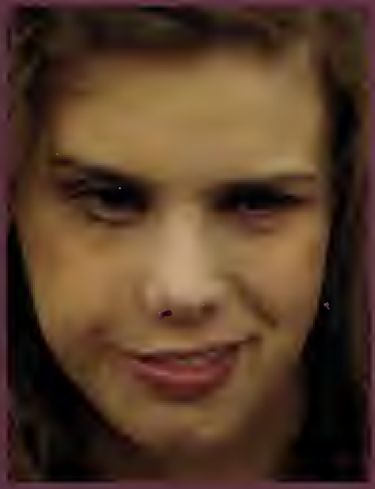
Between October 2004 and September 2009, 23 patients under the age of 18 underwent free gracilis transfer surgery. Their muscle performance was quantified before and after the surgery using the validated SMILE program as an objective measure of functional outcome. The patients were also evaluated for quality of life using the FaCE instrument. Based on these measures, we concluded that pediatric patients respond equally favorably to free muscle transfer for facial reanimation as compared with adults, and their quality of life significantly improved following reanimations.

Pediatric Gracilis Surgery Outcomes:

- The average commissure excursion in children improved by 8mm. This matched the results seen in the adult population.
- The number of children with complete failures (<0.2 cm excursion) was fewer than those of the adult population (2 failures in pediatric population; 5 in adult population).

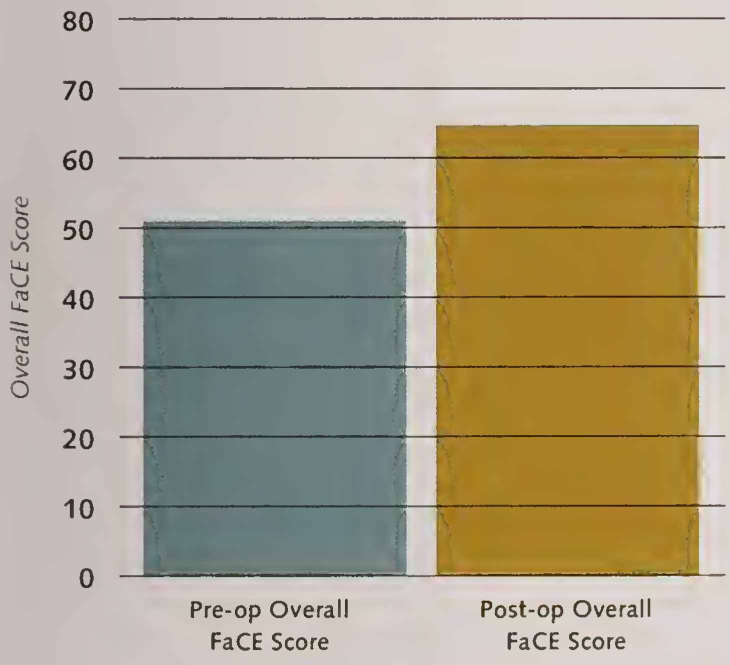


before



after

Improvement in FaCE scores Following Pediatric Gracilis Surgery



Thirteen patients completed both pre-intervention and post-intervention FaCE surveys for final analysis. Comparisons of pre-intervention and post-intervention FaCE scores in this age group rose from 51.3 to 65.7, demonstrating a significant improvement in overall patient quality of life following free gracilis transfer.

Laryngology Outcomes
The Voice Related Quality of Life Scale

Voice Related Quality of Life (VRQoL) results are not specific for any one symptom (hoarseness, weakness of voice, inability to project, vocal fatigue) but reflect a patient-perceived improvement in the voice and the ability to communicate verbally. Quality of life is very difficult to measure since it is influenced by the social, emotional, financial, and personal circumstances that surround the patient and how they have changed over time. It can happen that a cancer patient may objectively sound worse after treatment but report major (statistically significant) improvements in VRQoL due to the ease of mind knowing the cancer is gone or the perception that the voice is better because the cancer is gone.

We find consistently lower VRQoL scores in laryngeal cancer patients than in professional singers who sound completely normal to everyone around them but are being seen for a tickle in the throat. The highest possible score is 100. Serious diseases have a way of forcing patients to prioritize what is truly important to them and to minimize the minor issues related to their healthcare.

Phonomicrosurgery to Remove Vocal Fold Nodules, Polyps and Cysts

Mean Pre-Op VRQoL	Mean Post-op VRQoL	p-value
48	86	0.000007

An increase in VRQoL score indicates improvement in quality of life.

Vocal nodules, polyps and cysts cause symptoms by inhibiting the proper closure of the vocal folds during voicing. Typical symptoms associated with these lesions include hoarseness, vocal fatigue, loss of high notes and effortful voicing. Phonomicrosurgical removal of the lesion(s) after a trial of voice therapy that fails can restore vocal range, vocal quality and improve the effort of speaking. The VRQoL tool was used prior to surgery and compared to the results after surgery to measure the improvement in voice-related symptoms.

This group consists of patients with benign true vocal fold lesions (nodules, polyps and cysts) who underwent phonomicrosurgical resection of these lesions in the operating room under general anesthesia. These patients seek medical attention due to significant hoarseness, vocal fatigue and loss of high notes (singers and performers).

Laryngology Outcomes
Treatments for Unilateral Vocal Fold Movement Impairment (Paresis and Paralysis)

Injection Laryngoplasty

Mean Pre-Op VRQoL	Mean Post-op VRQoL	p-value
62	73	0.02

These are patients who come in complaining of vocal fatigue, lack of volume and unremitting hoarseness due to unilateral vocal fold paresis/paralysis or bilateral loss of vocal bulk due to the natural aging process (presbylarynx).

Open Medialization Laryngoplasty

Mean Pre-Op VRQoL	Mean Post-op VRQoL	p-value
47	64	0.04

These are patients who require formal surgery to reconstruct the voice when there is a vocal fold paralysis/paresis or presbylarynx. These procedures are performed via a horizontal incision across the front part of the neck (two to four inches across) under local anesthesia so we can listen to how we are changing the voice.

The larynx is a supremely dynamic organ that represents the pinnacle of fine motor control in the animal kingdom. Our very lives depend on the function of the rich network of sensory and motor nerve fibers that keep us from aspirating food and drink into our lungs each time we eat. Voice is a byproduct of the way the system works, making the voice susceptible to nerve problems. Patients with vocal fold movement impairment, paresis (temporary or incomplete problems) or paralysis (permanent and complete loss of function), typically have complaints related to the inability to close the vocal folds during voicing such as breathy hoarseness, vocal fatigue, inability to project the voice, and the feeling of losing the breath while speaking or exercising. Treatment is directed at correcting the persistent gap by either supporting the weak vocal fold through an awake clinic injection technique (Injection Laryngoplasty) or manipulating the cartilaginous laryngeal framework in the operating room through a neck incision (Open Medialization Laryngoplasty).

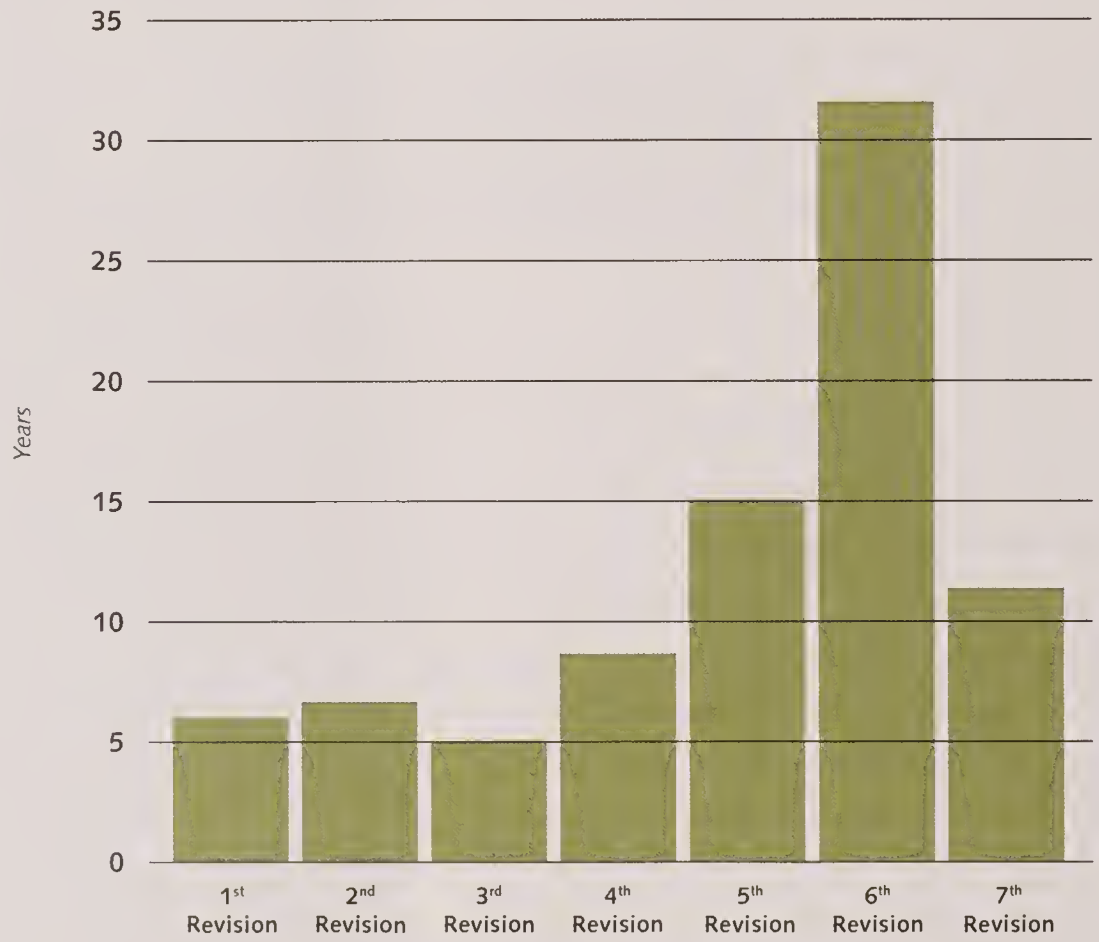
Thyroid/Parathyroid Surgery Outcomes

The Thyroid Division is focused on the management of thyroid disorders including surgical management of thyroid cancer and its recurrence. Revision thyroid and neck surgery for thyroid cancer is typically associated with increased risks to the recurrent laryngeal nerve. Our center has focused on state-of-the-art recurrent laryngeal nerve monitoring to optimize management of this nerve during thyroid surgery.

Thyroidectomy/Parathyroidectomy: Recurring Laryngeal Nerve Injury

We reviewed our experience from 2004 to 2009 in 117 patients undergoing revision neck surgery at Mass. Eye and Ear for thyroid cancer. In 70% of patients our surgery was their first revision, in 21.4% of patients our surgery was their second revision surgery and in 5.1% of patients our surgery was their third revision surgery. In 0.8% of patients our surgery was their fourth, fifth, sixth or seventh revision surgery (see Table 1).

Table 1. Time from Primary to Last Revision Surgery



In this study, we observed the following outcomes:

- **The average duration of revision surgery was 152 minutes (range: 65-383 min).**
- **The average estimated blood loss for revision surgery was 40mLs (range: 15-100 mLs).**
- **There were no cases of new vocal cord paralysis following surgery, temporary or permanent.**

RADIOLOGY DEPARTMENT

The Department of Radiology at Mass. Eye and Ear is one of the only radiology departments in the world that is exclusively devoted to the care of patients with disorders of the eyes, ears, nose, throat, head and neck. This central focus brings a specialization that significantly contributes to the successful outcomes of our patients.

The department provides:

- Board certified radiologists with additional American Board of Radiology certificate of added qualification;
- Radiologists with experience built upon unique patient populations and constant exposure to routine and rare diseases;
- Constant surgical follow-up with verification of findings, considered to be one of the most effective methods of maintenance and improvement of imaging skills;
- Greater familiarity with the anatomy and variations of pathology than would be possible in less specialized institutions;
- Ease of access to audiology, otopathology and temporal bone laboratories to facilitate the clarification of complex anatomic points;
- Imaging at the leading-edge of technology, allowing definition of subtle extensions of disease to achieve the best results for patients.

Consistent with continuous quality improvement efforts at Mass. Eye and Ear, the Radiology Department has begun to formally measure extravasation rates in CT and MRI on an annual basis relative to contrast administration, as well as reporting on call back time for emergency wet reads. We expect timely reporting of these data in Mass. Eye and Ear's next Quality and Outcomes edition.

NURSING DEPARTMENT

The Department of Nursing at Mass. Eye and Ear is a service-oriented department providing compassionate, safe, quality nursing care to our patients. The Nursing Department believes that the knowledge base of professional nursing is derived from the biological, psychological, physical, and social sciences and that quality nursing care arises from the clinical application of evidence based care. Care is delivered within a tangible framework of care, compassion, and respect for the dignity of the patient and family and/or significant other. The ultimate goal of Mass. Eye and Ear nursing care is to restore the patient to the optimal level of health and provide as much comfort as possible. We recognize that this is a continuous process requiring a collaborative effort of all members of the healthcare team.

Nursing care is planned by a professional nurse according to the professional nursing standards and is based on the patient's chronological age and developmental needs. Patient centered nursing care is used as the department's model of care, with the ultimate goal of restoring patients to their optimal levels of health and comfort. Mass. Eye and Ear is dedicated to providing high-quality patient care to adult and pediatric patients based on the patient's needs.

Staffing Effectiveness and Staffing Plans

The Chief Nursing Officer, with input from nursing leadership, ensures that there is professional and ancillary staff to provide safe, quality care to our patients. Mass. Eye and Ear is committed to positive patient outcomes, patient safety, and a high level of patient satisfaction. A staffing plan for each patient care area is developed by the nurse manager, and outlining the number and skill mix of staff required to provide for patients' individualized needs and for quality and patient safety.

Clinical indicators have been identified to evaluate and assess staffing effectiveness at Mass. Eye and Ear. This supports the objective of providing an adequate skill mix and a sufficient number of competent staff by evaluating the information which links staffing effectiveness to clinical outcomes. Once data on the identified clinical indicators is collected and analyzed, root causes are identified for possible correlations that require action to ensure quality care, patient safety, and a high level of patient satisfaction.

Outcomes

The Department of Nursing's outcome measures are aligned with the organization's Quality Plan and demonstrate the impact specialty nurses have on patient care and outcomes. In choosing measures, the following questions were considered:

- **What is the value of this measure?**
- **Why would a patient care about this measure?**
- **What does the result of this measure do for patient care?**

This section summarizes some of our department's many initiatives to transform and improve nursing care and outcomes for our patients.

Nursing Outcome Measure:

Practice Environment Scale (PES)

This measure was chosen because the nursing care environment has been linked to patient satisfaction and patient outcomes. A rating scale of 1-4 was utilized to measure the nursing practice environment (4 being most favorable and 1 being least favorable).

The PES is a nurse sensitive measure endorsed by the National Quality Forum and represents how our nurses feel regarding the quality of care they deliver, the resources they have to do their jobs, and their nurse-physician relationships.

Eligibility to complete the survey included:

- Registered nurse with minimum of three months of employment at Mass. Eye and Ear (no travelers or agency)
- 50% of job scope is clinical care

Our nurses' response rate for the survey was:

2007 - 86%
2008 - 89%
2009 - 91%
2010 - 91%

The areas of focus for this report are:

Nursing Foundations for Quality of Care, this includes:

- Continuity of nurse's patient care assignments
- High standards of nursing care
- Active Nursing Quality program
- Clinically competent nurses

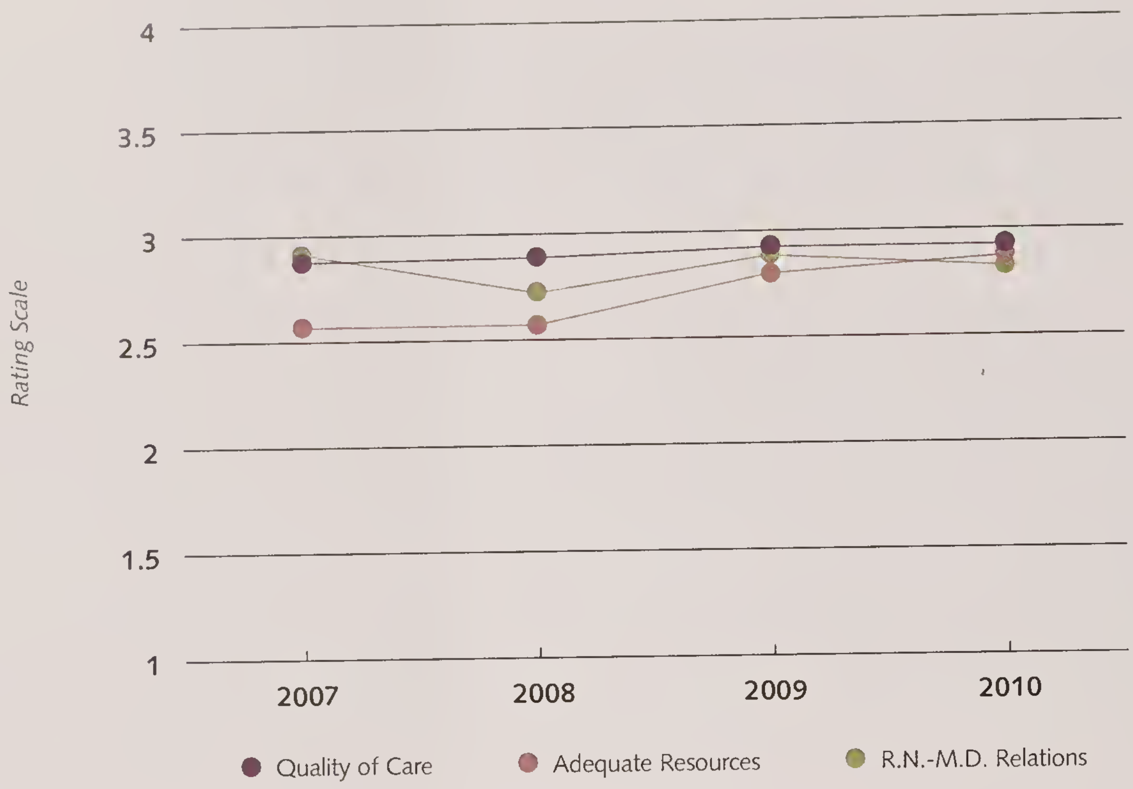
Adequate Resources, this includes:

- Adequate support services
- R.N. to patient ratio based on patient needs

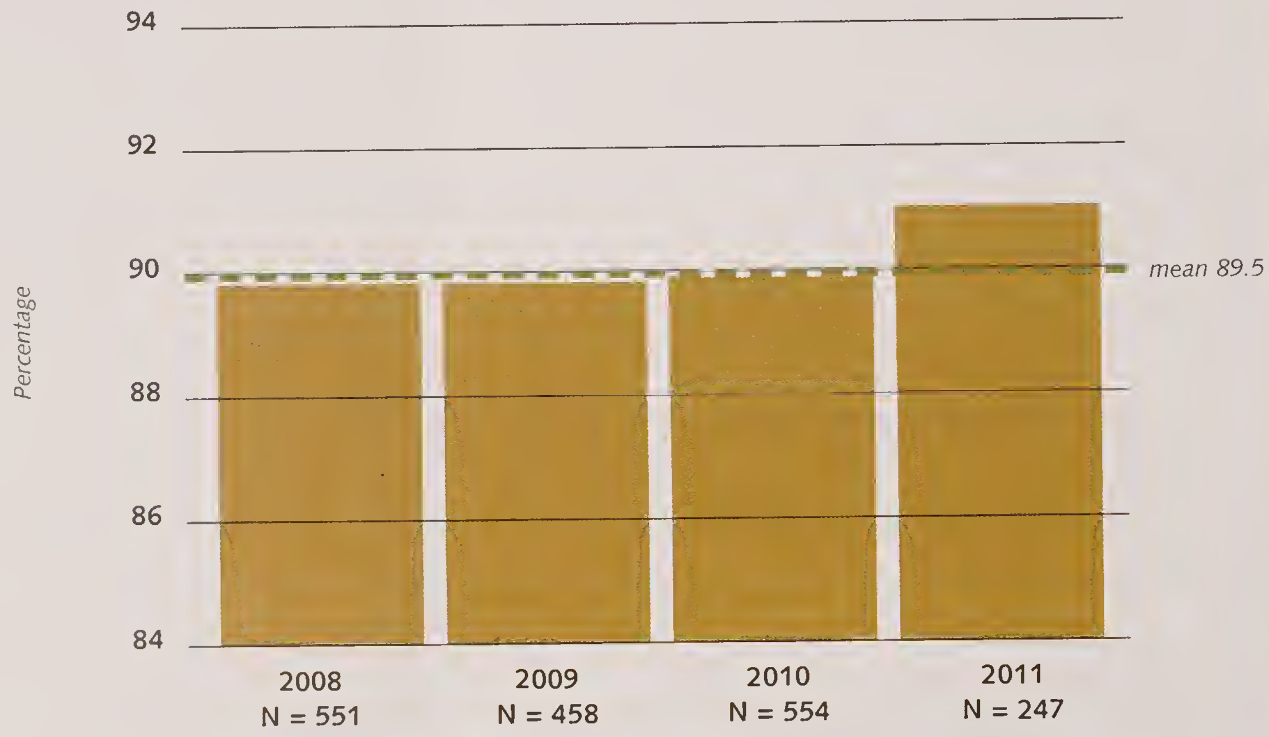
Collegial Nurse-Physician Relations, this includes:

- Good working relationships between R.N.s and M.D.s
- Collaboration between R.N.s and M.D.s

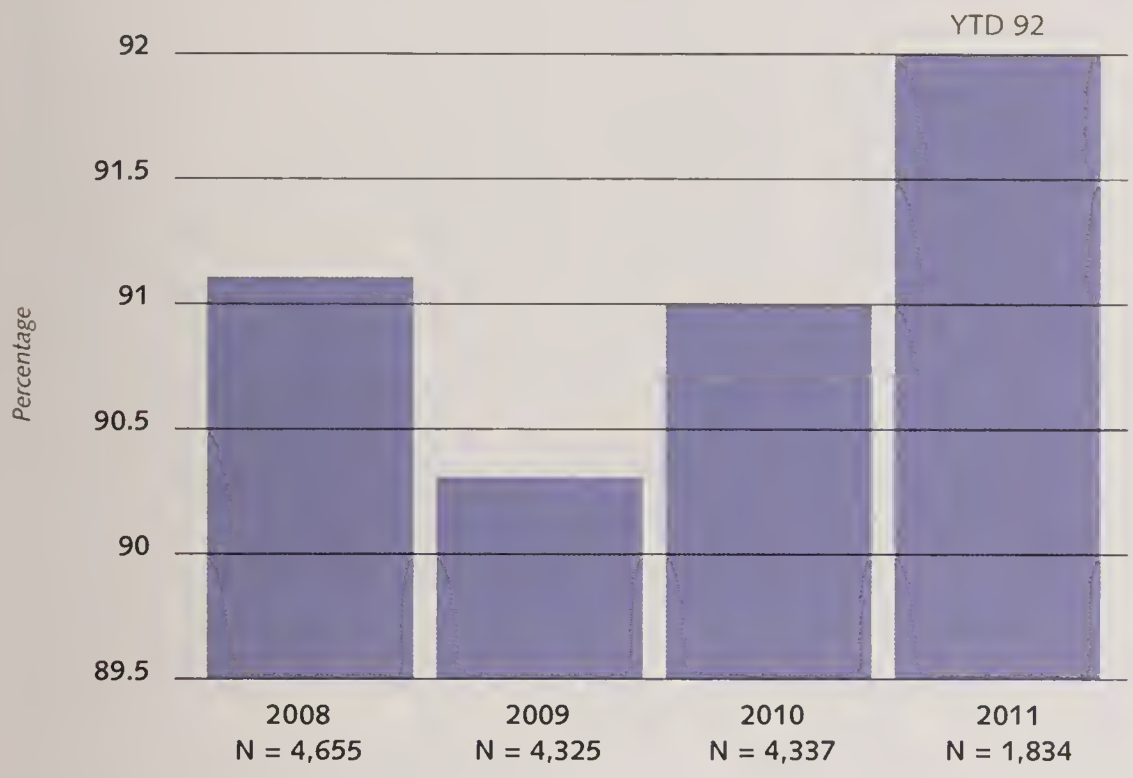
PES 2007-2010



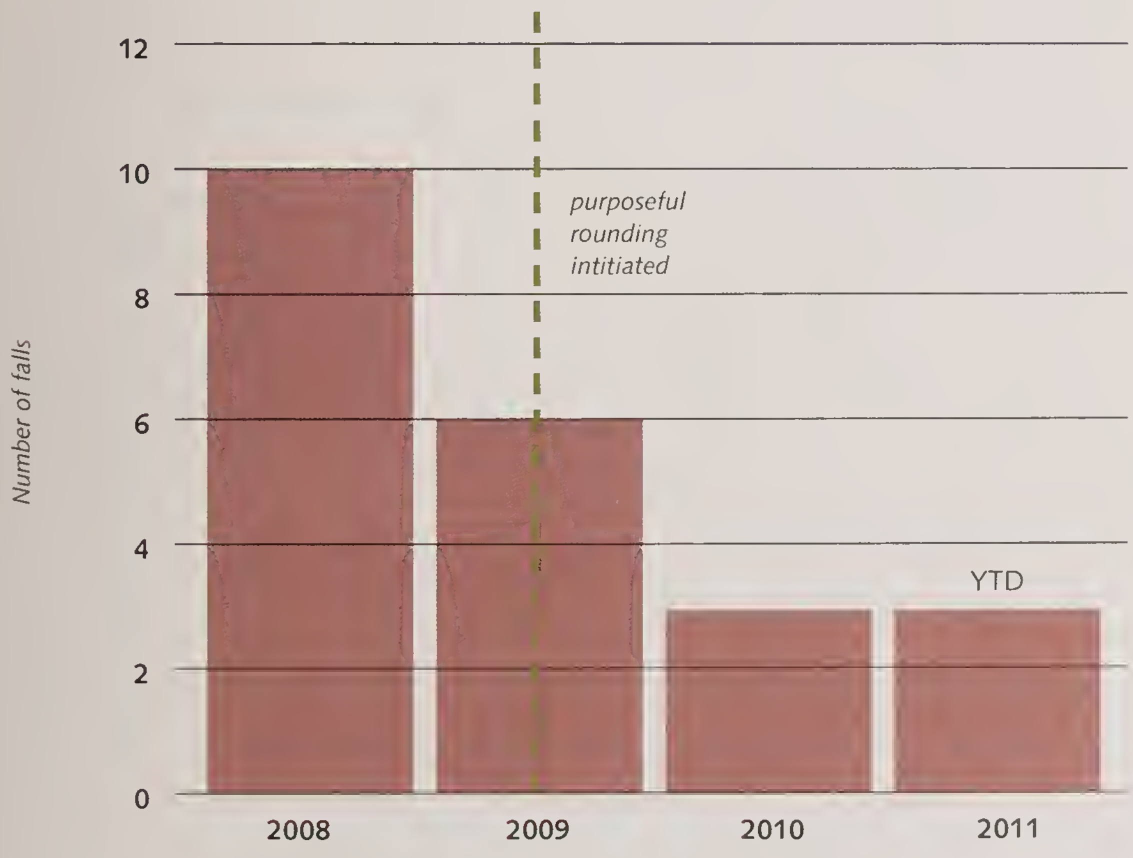
Service Excellence-Nursing
Patient Satisfaction-Inpatient: Skill of the Nurses



Patient Satisfaction-Ambulatory Surgery: Instructions Regarding Home Care



11th Floor Adult Unit Falls Data 2008-2011



Having a surgical procedure combined with sensory deprivation can increase a patient's risk of falling. The objective of the 11th Floor Adult Nursing Unit's Quality Plan is to provide our patients with safe patient care. Inspired by this commitment, the Department of Nursing incorporated purposeful rounding into the daily routine of the staff in 2009 with the aim to reduce falls.

Fall prevention remains a priority and a quality goal on the Adult Unit.

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MASSACHUSETTS EYE AND EAR INFIRMARY

Quality and Outcomes 2012

Massachusetts
Eye and Ear

Clinical Leadership in Quality: 2011-2012

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Mary Kennedy
Risk Manager

Michael Ricci
Chief Information Officer

Peter Spivack
Chief Information Officer

A Letter from the President

Dear Colleagues in Healthcare,

Massachusetts Eye and Ear is proud to present the 2012 edition of Quality and Outcomes. Great outcomes are a direct result of highest-quality care and a commitment to continue to improve. At Mass. Eye and Ear, we are very proud of the many individuals — from the surgeons, to the nurses, to the front-line staff — who elevate that level of care each and every day. Their commitment and passion to create the best outcomes for our patients makes a tremendous difference in improving those patients' quality of life.

Thanks to leadership from our Department Chairs (Joseph B. Nadol, Jr., M.D.; Joan W. Miller, M.D.; Hugh Curtin, M.D.; Sunil Eappen, M.D.), the Mass. Eye and Ear quality program continuously sets the highest standard of care for our ever-evolving specialties. Serving a largely outpatient population, Mass. Eye and Ear has just 41 inpatient beds, but upwards of 20,000 surgical patients each year. While challenging, creating measures and benchmarks specifically for these specialties brings great rewards. We realize that the first step in improving quality and outcomes comes from being able to measure them. You can't get better (and demonstrate that you are better) unless you can measure and display where you are now. We are setting the standard in the United States, and indeed the world, with our commitment to publish outcomes.

In the pages that follow you will also learn of Mass. Eye and Ear's dedication to patient safety, collaboration-in-care, technologic advances, and clinical research — all with a focus on improving patient treatments and, ultimately, finding cures.

Mass. Eye and Ear has long focused on Accessibility, Affordability and Accountability in healthcare. We hold ourselves accountable to providing and producing the very best outcomes for eye, ENT and head and neck cancer patients. This triple-A standard is just one way we define high quality.

We hope you find this publication helpful. For an electronic version of this report and to see new innovations from Mass. Eye and Ear, please log on to MassEyeAndEar.org/Quality.

John Fernandez
President & CEO,
Massachusetts Eye and Ear

Please note that information contained in this book focuses primarily on the work of the full-time staff at Mass. Eye and Ear's main Boston campus, unless otherwise stated.

About Massachusetts Eye and Ear

Founded in 1824, the Massachusetts Eye and Ear Infirmary is a pre-eminent specialty, teaching and research hospital dedicated to caring for disorders of the eyes, ears, nose, throat, head and neck. Our dedicated staff provides primary and subspecialty care and serves as a referral center for inpatient and outpatient medical and surgical care.

Mass. Eye and Ear is the leading authority in its specialties throughout the northeast and is a resource globally for advances in patient care, research and education. As the primary academic center for Harvard Medical School's Departments of Ophthalmology and Otolaryngology, we are deeply committed to providing a superb education to the next generation of visionary healthcare leaders. Our world-renowned experts are continuously innovating in the fields of translational and bench research, turning insights into cures that benefit countless people. We continue to forge new partnerships and alliances — locally, nationally and beyond our borders — to increase our reach and make our expertise, services and resources available to all who need them.

Pivotal to our clinical quality efforts is the use of the Longitudinal Medical Record (LMR), an integrated and secure system of communication and medical record sharing among the majority of Harvard Medical School's network of hospitals and affiliates. This network facilitates quick and easy communication among referring physicians and Mass. Eye and Ear's consulting ophthalmologists, otolaryngologists and radiologists. It also enables our physicians to instantly tap our in-house specialists, affording seamless and rapid access to some of the best ophthalmology and otolaryngology resources available.

Fiscal Year 2011 Volume	
Outpatient service	277,512
Ambulatory surgery services	19,880
Inpatient surgical services	1,185
Emergency Department Services	19,297
Discharges	1,475

Fiscal Year 2011 beds	41
Fiscal Year 2011 Overall Operating Revenue	$279,741,869

Clinical Locations

Boston – Main Campus

Boston – Longwood

Boston – Joslin

Braintree

Concord

Duxbury

East Bridgewater

Milton

Newton

Quincy

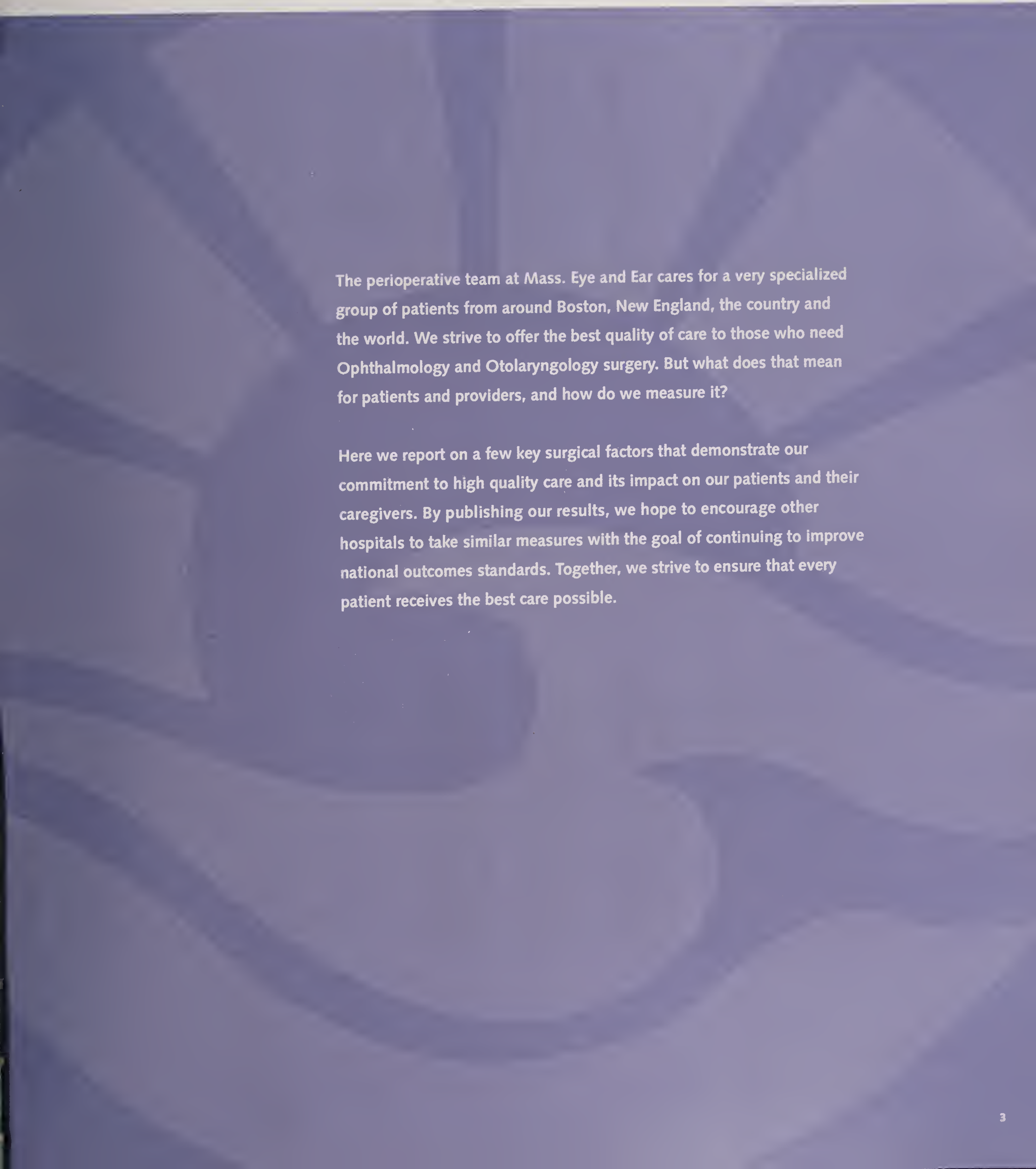
Stoneham

Weymouth

For more information, please visit MassEyeAndEar.org.

Massachusetts Eye and Ear Infirmary

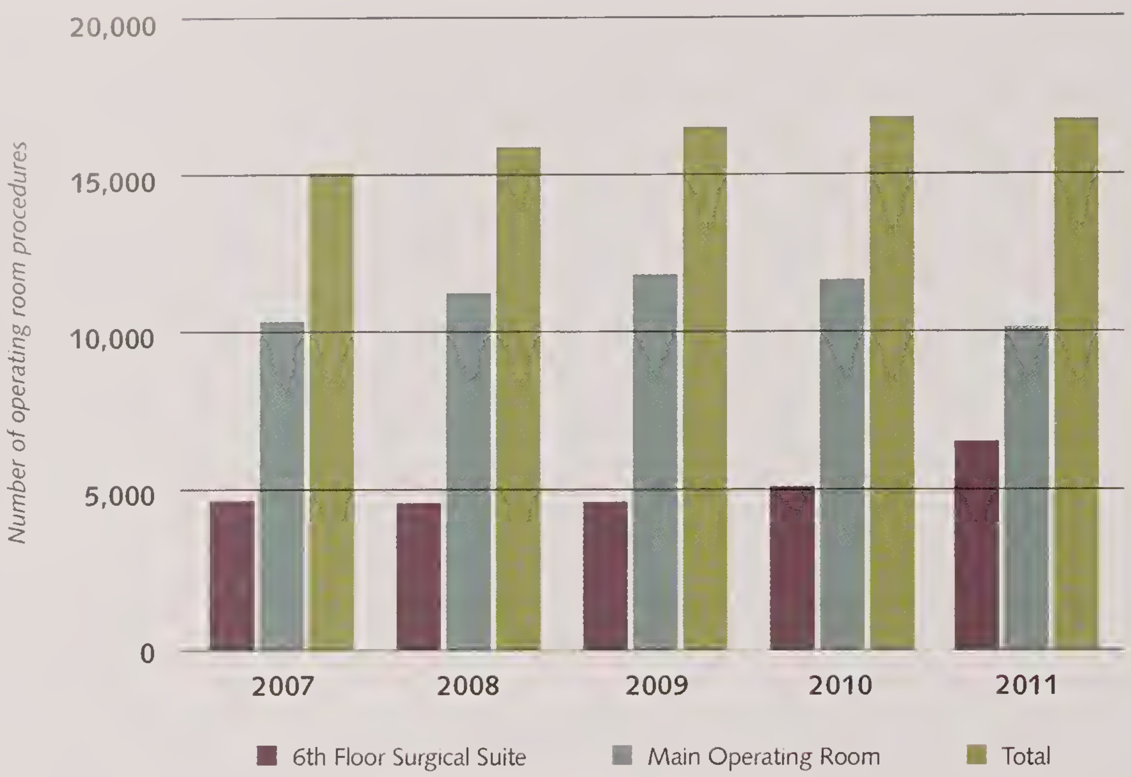
SURGERY OVERVIEW



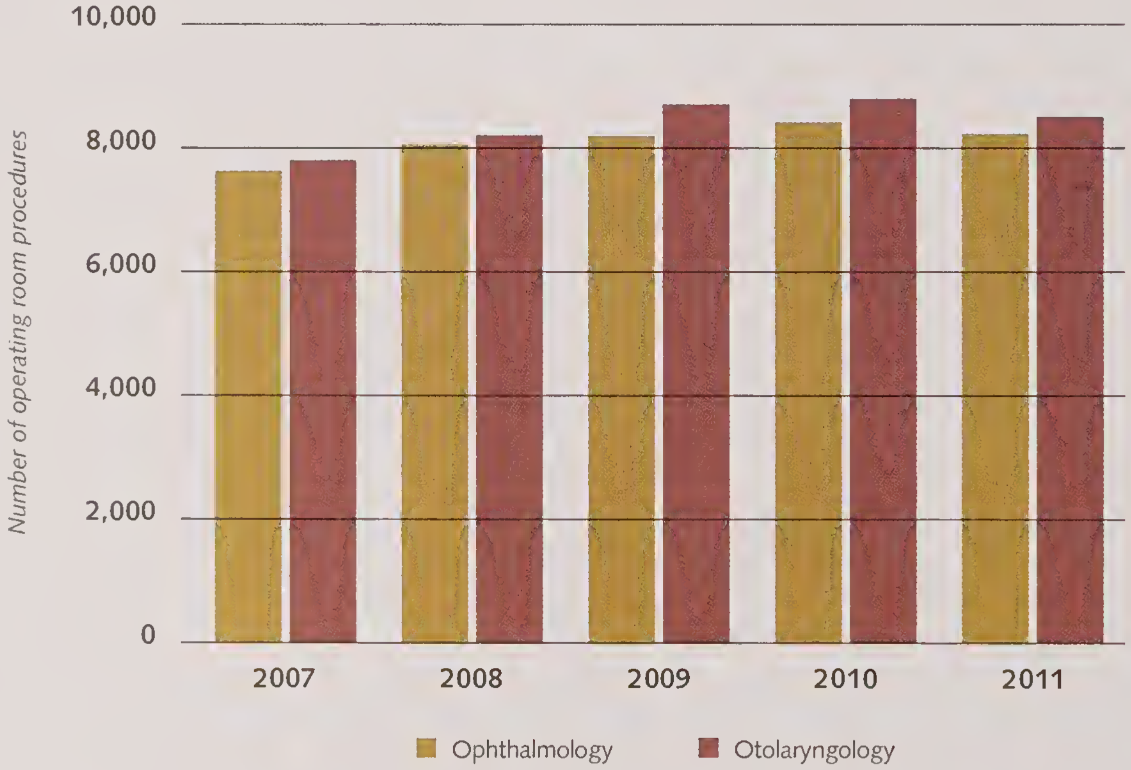
The perioperative team at Mass. Eye and Ear cares for a very specialized group of patients from around Boston, New England, the country and the world. We strive to offer the best quality of care to those who need Ophthalmology and Otolaryngology surgery. But what does that mean for patients and providers, and how do we measure it?

Here we report on a few key surgical factors that demonstrate our commitment to high quality care and its impact on our patients and their caregivers. By publishing our results, we hope to encourage other hospitals to take similar measures with the goal of continuing to improve national outcomes standards. Together, we strive to ensure that every patient receives the best care possible.

Mass. Eye and Ear Surgical Volume (Main Campus)



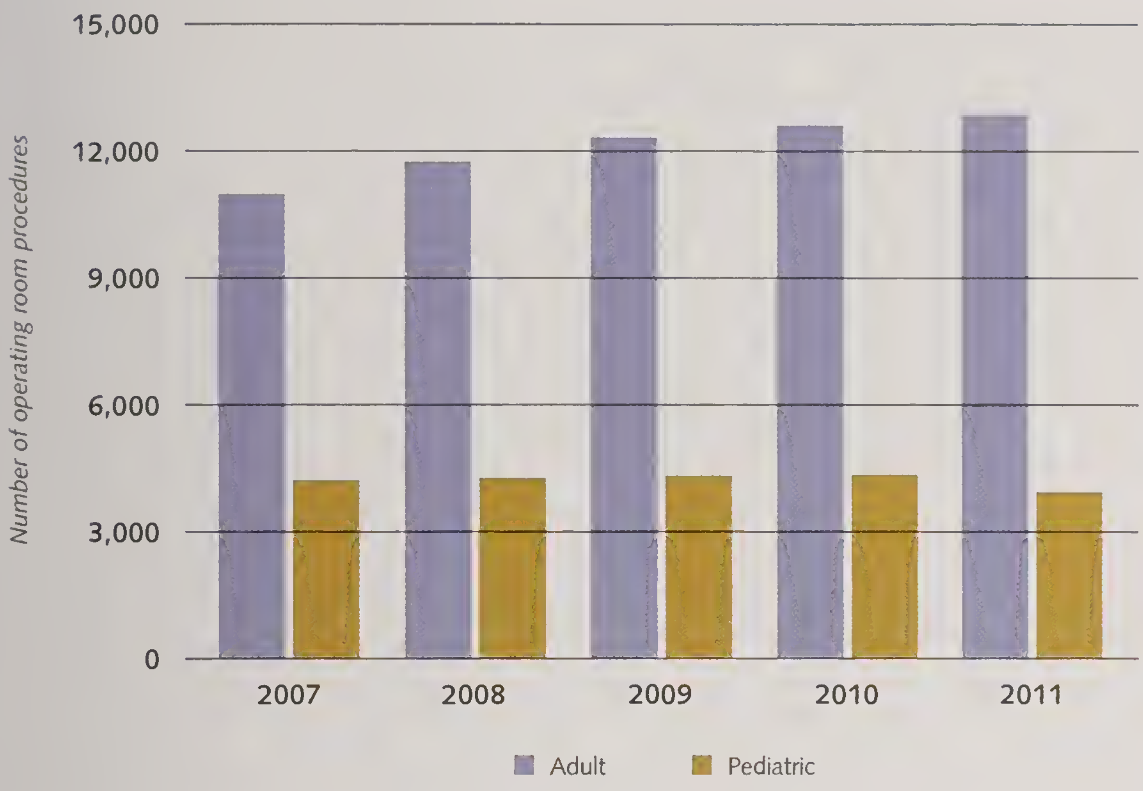
Ophthalmology and Otolaryngology Surgical Volume



Mass. Eye and Ear has 17 operating rooms at its main campus that are split between a Main Operating Room (MOR) which has 12 rooms and a 6th Floor Surgical Suite which has five rooms. The majority of the cases that occur in the 6th Floor Surgical Suite are ophthalmic, relatively short, and have 99% of the patients going home on the same day of surgery. The MOR handles the majority of otolaryngology procedures as well as the majority of the pediatric surgery we perform. All of the urgent and emergency cases that occur in the evenings and weekends are treated in the MOR.

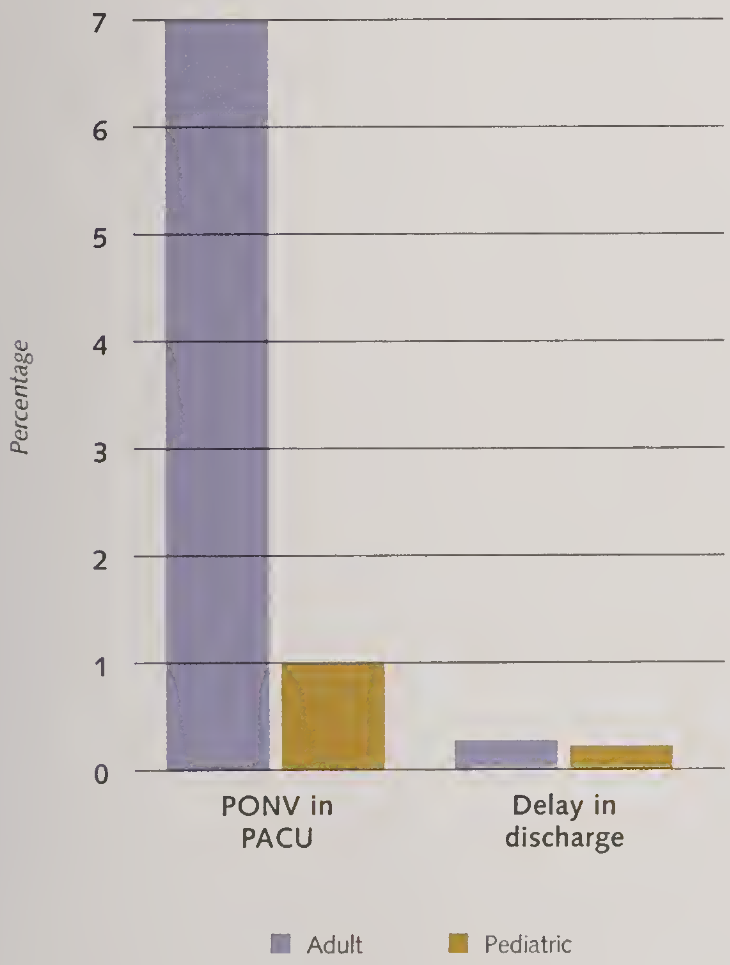
The Ophthalmology and Otolaryngology surgical volumes are split fairly evenly, and the numbers have been consistently rising over the last several years.

Adult versus Pediatric Volume



Mass. Eye and Ear cares for the most pediatric otolaryngologic patients in the area and for more pediatric surgical patients than any hospital except Boston Children's Hospital. Pediatric surgical volume has remained a little more than one-third of Mass. Eye and Ear's overall volume over the last few years.

Postoperative Nausea and Vomiting (PONV) in the Post Anesthesia Care Unit (PACU)

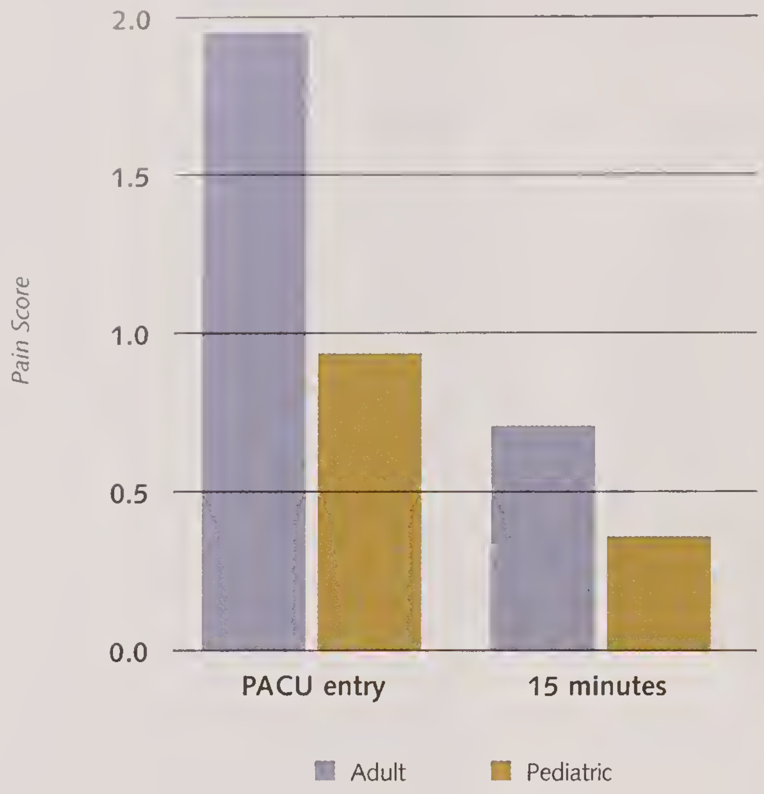


These numbers reflect patients who had nausea and/or vomiting in the PACU despite therapy in the operating room and required additional treatment to alleviate their discomfort. The delay in discharge criteria reported reflects the number of patients who continued to have prolonged nausea despite additional therapy. Typical reports of PONV range from 20-30% incidence.

The data reflect a sample subset of our total patient population who went through the recovery room. (N = 3,712 for adults and N = 2,203 for pediatric patients)

Nausea is one of the most common and troublesome complications occurring after surgery in both pediatric and adult patients. Additionally, it is well known that patients undergoing ophthalmic and otolaryngologic procedures are at significantly higher risk of postoperative nausea and vomiting (PONV) when compared to patients having other types of surgery. As a result, nearly every one of our patients receives prophylactic treatment with the latest combination of appropriate antiemetic medications in order to minimize the chances of PONV.

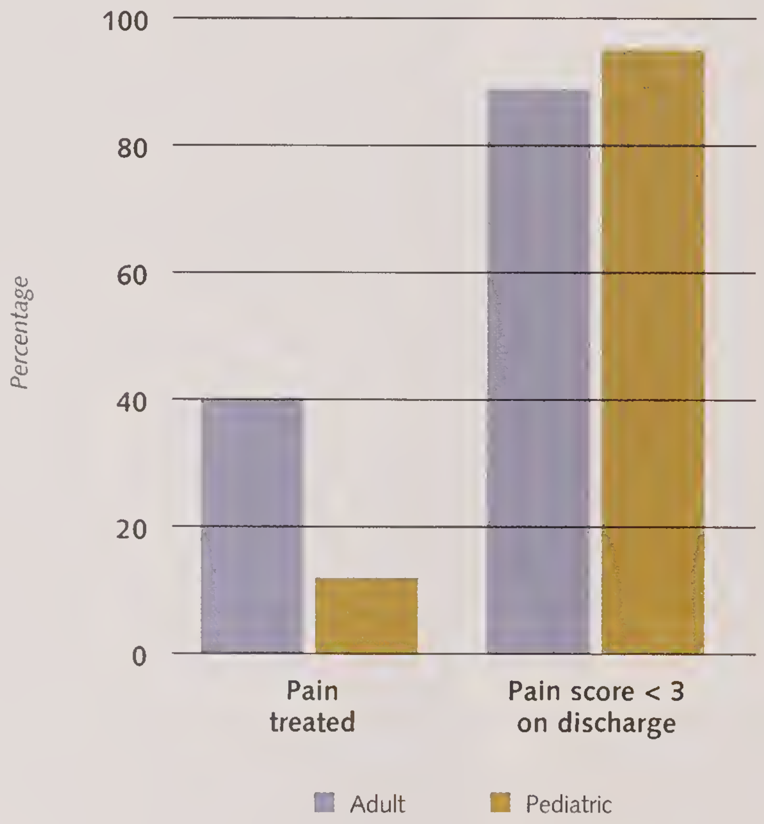
Pain Score in the Post Anesthesia Care Unit (PACU)



Using these 0-10 scales, our goal is to treat pain above a '3' and discharge patients from the PACU with scores less than 3.

We report a sample subset of patients from 2010. (N = 3,274 for adults and N = 1,896 for pediatric patients.)

Treatment Success of Pain in the PACU



Using these 0-10 scales, our goal is to treat pain above a '3' and discharge patients from the PACU with scores less than 3.

We report a sample subset of patients from 2010. (N = 3,274 for adults and N = 1,896 for pediatric patients.)

Pain after surgery is one of patients' most common fears. Our goal is to have patients awaken in the operating room and arrive in the Post Anesthesia Care Unit (PACU) or recovery room as comfortable as possible. Often in the recovery room, the patient may need more analgesics prior to leaving. Our goal is to ensure that as many patients as possible leave this area either to home or to their hospital room comfortable.

We use a 10-point visual analog score for adults to self-report their pain. The scores reported above reflect the adults' perception of their own pain assessment and their request for pain medications.

For pediatric patients old enough to assess their own scores, we use the same 10-point scale as used for adults. For patients too young to use the scale, the nurses in the PACU use the FLACC (Facial-Legs-Arms-Crying-Comfortable) scale that attributes behavioral characteristics to a 10-point pain scale. These are the scores reported above for pediatric patients.

Massachusetts Eye and Ear Infirmary

OPHTHALMOLOGY DEPARTMENT

At the Mass. Eye and Ear/Harvard Medical School Department of Ophthalmology, we have nearly two centuries of experience in developing innovative approaches to treating eye disease and reducing blindness worldwide. We founded subspecialty training in cornea, retina and glaucoma, and have pioneered tools and treatments for numerous diseases and conditions ranging from retinal detachment to age-related macular degeneration to corneal scarring. Our core values are patient-centered and focus on delivering the highest quality of care through education, innovation and service excellence.

MASS. EYE AND EAR DEPARTMENT OF OPHTHALMOLOGY

- Primary teaching hospital of Harvard Medical School's Department of Ophthalmology.

- Home to Schepens Eye Research Institute, Retina Research Institute, Howe Laboratory of Ophthalmology, Berman-Gund Laboratory for the Study of Retinal Degenerations, and the Ocular Genomics Institute.

Clinical Affiliations

- Massachusetts General Hospital (MGH) Department of Ophthalmology
  - Mass. Eye and Ear provides comprehensive and subspecialty care, including Neuro-Ophthalmology and Burn Unit consultations and coordination of inpatient consultations for urgent patient care concerns at MGH.
  - High-risk patients are screened by Mass. Eye and Ear staff for diabetic eye disease through the MGH Chelsea Health Center teleretinal screening program.
- Joslin Diabetes Center/Beetham Eye Institute
  - Mass. Eye and Ear and Beetham Eye Institute clinicians provide coordinated, integrated and comprehensive care in preventing, diagnosing and treating eye problems related to diabetes.
  - Our clinical alliance provides coordinated care to eye patients throughout greater Boston, especially those with or at-risk for diabetic-related eye disease.
- Brigham and Women's Hospital (BWH)
  - Mass. Eye and Ear staff provides 24/7 eye trauma coverage and inpatient subspecialty care and consultations at BWH. An outpatient comprehensive ophthalmology service (One Joslin Place) provides follow-up care to BWH patients and is staffed by Mass. Eye and Ear physicians with participation from Joslin retina specialists.
- Children's Hospital Ophthalmology Foundation (CHOF)
  - Mass. Eye and Ear ophthalmologists provide subspecialty care in glaucoma and cornea disease at Boston Children's Hospital.
  - Children's Hospital ophthalmologists staff the comprehensive pediatric ophthalmology and strabismus clinic at Mass. Eye and Ear.

Ophthalmology Resources at Mass. Eye and Ear

- Full spectrum of primary and subspecialty ophthalmic care.
- Highly skilled ophthalmic teams staff each clinical area.
- Dedicated 24/7 eye emergency department.
- Morse Laser Center provides advanced laser procedures using state-of-the-art refractive, glaucoma, retinal and anterior segment lasers.
- Ocular Surface Imaging Center enables rapid, non-invasive corneal biopsies.
- Electroretinography Service performs evaluations of patients with retinal disease referred for diagnosis, prognosis, genetic counseling and treatment.
- The David Glendenning Cogan Laboratory of Ophthalmic Pathology provides enhanced diagnostic services in conjunction with the Mass General Surgical Pathology Service.
- The Howe Library houses one of the most extensive ophthalmology research collections in the world.
- Full service Contact Lens Service specializes in therapeutic fits, bandage and specialty contact lenses.
- Mass. Eye and Ear Medical Unit, staffed by MGH physicians.
- Mass. Eye and Ear Radiology Department houses a dedicated MRI/CT imaging suite.
- Dedicated Social Work and Discharge Planning Department.
- The International Program offers patients assistance with appointments, transportation, accommodations and language translation.

Academic Affiliations

Massachusetts General Hospital

Brigham and Women's Hospital

Beth Israel Deaconess Medical Center

Joslin Diabetes Center/ Beetham Eye Institute

Boston Children's Hospital

Veterans Affairs Boston Healthcare System

VA Maine Healthcare System

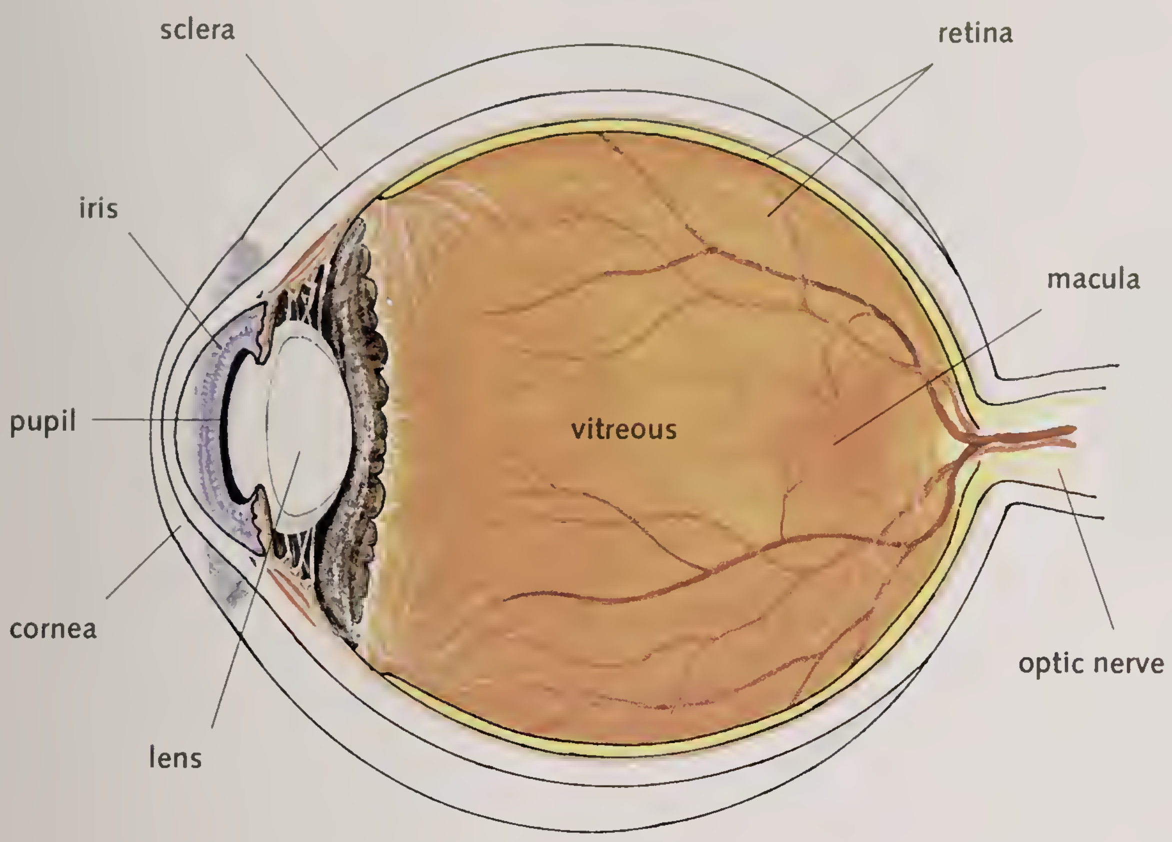
Cambridge Health Alliance

Aravind Hospital, India

Eye and ENT Hospital of Fudan University, Shanghai, China

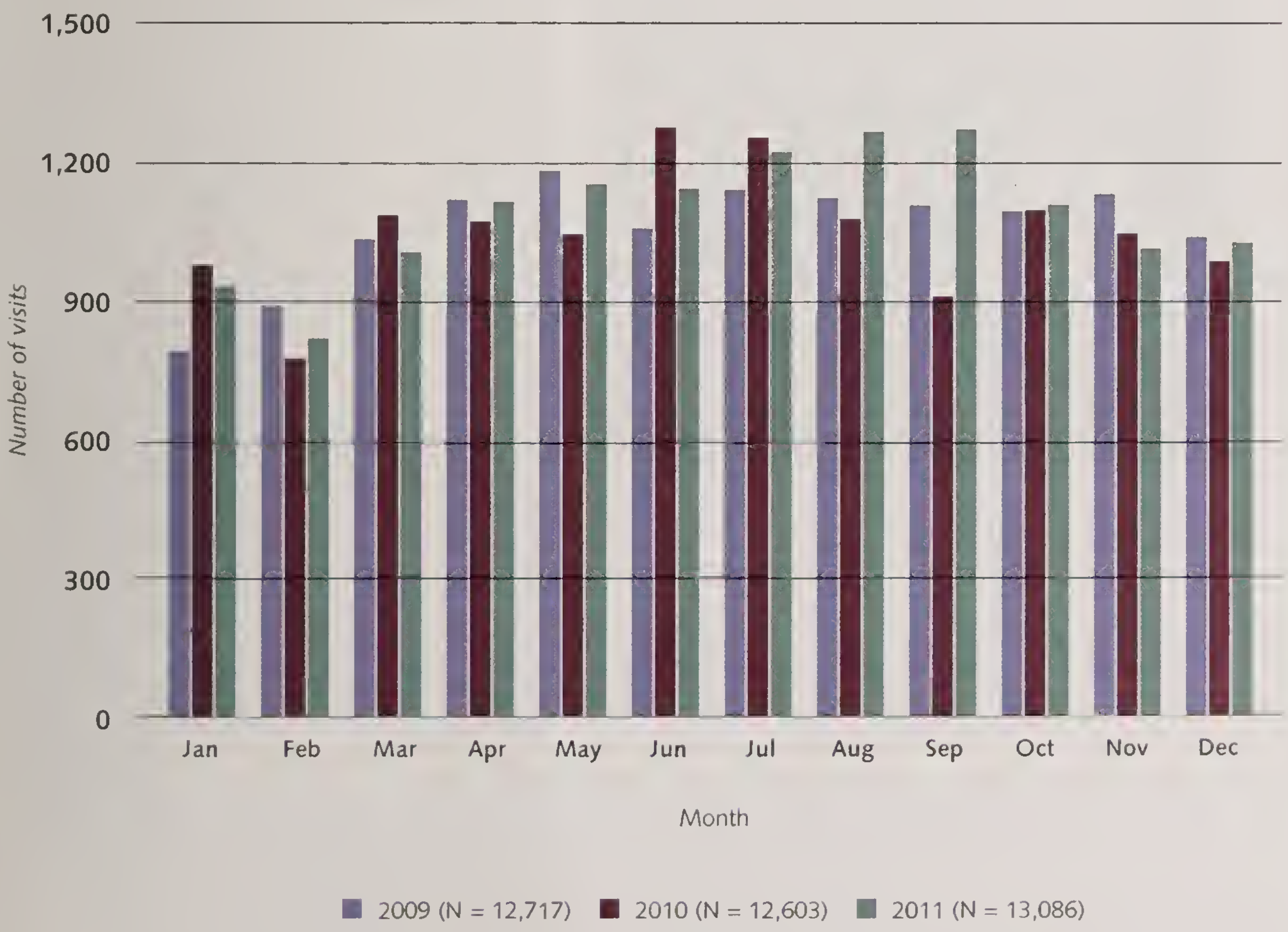
For more information about the Mass. Eye and Ear Quality Program or the Department of Ophthalmology, please visit our website at www.MassEyeAndEar.org.

Eye Anatomy


sclera
retina
iris
macula
pupil
vitreous
cornea
optic nerve
lens

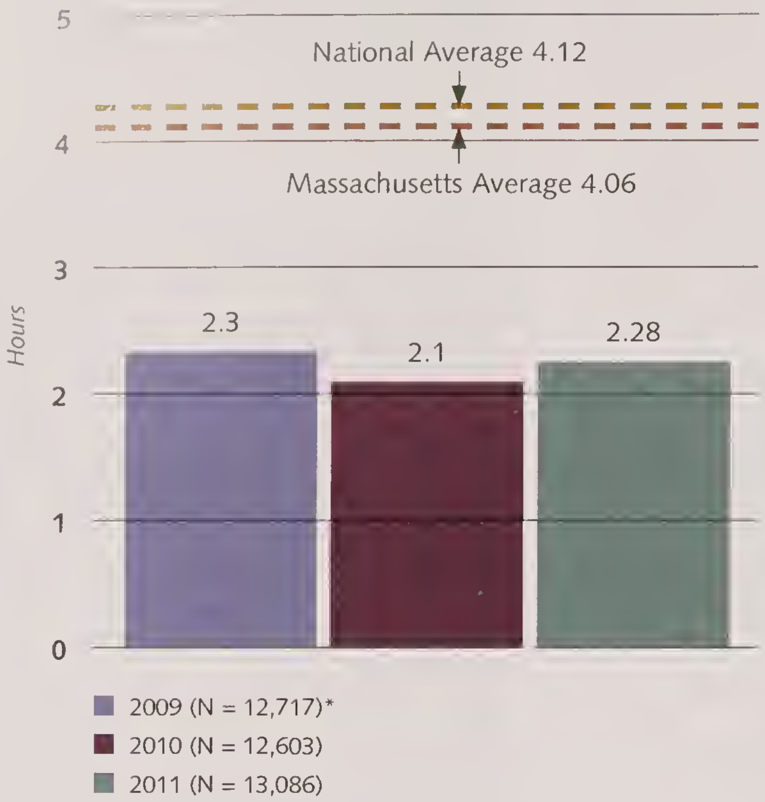
Data reported for 2010 and 2011 represent calendar years. The 2009 data represent 12 month results as noted.

Emergency Department: Ophthalmology Emergency Visits



This bar graph shows the number of ophthalmology patients seen monthly by the Mass. Eye and Ear Emergency Department during the 2009, 2010 and 2011 calendar years. During this three year period, the Emergency Department maintained a high volume of ophthalmic emergency visits, with an average of 1,060 patients per month in 2009, 1,050 in 2010, and 1,091 in 2011. Patient volume generally increases in the summer.

Emergency Department: Ophthalmology Visit Times

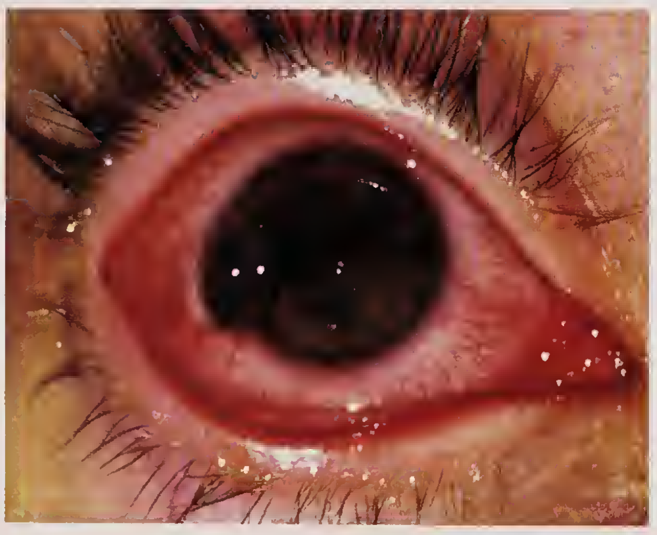


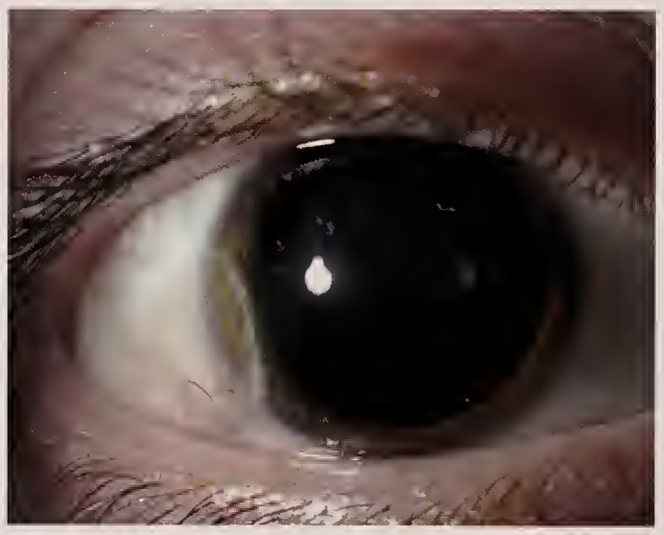
*October 2008 – September 2009

The average ophthalmology visit time in the Mass. Eye and Ear Emergency Department for 2011 was 2.28 hours. The 2011 average visit time was similar to 2009 and 2010 visit times, which were 2.3 and 2.1 hours, respectively. The average visit time is defined as the total time from when the patient walked in the door at the Mass. Eye and Ear Emergency Department to when the patient walked out the door after having seen the ophthalmologist. According to the 2010 Press Ganey Emergency Department Pulse Report, patients across the United States spent an average of four hours and seven minutes (4.12 hours) per ER visit. The Massachusetts (State) average visit time was 4.06 hours.

For the past three years, the average ophthalmology visit time in the Mass. Eye and Ear Emergency Department was almost half the average national and state visit times.

Eye Trauma Surgery

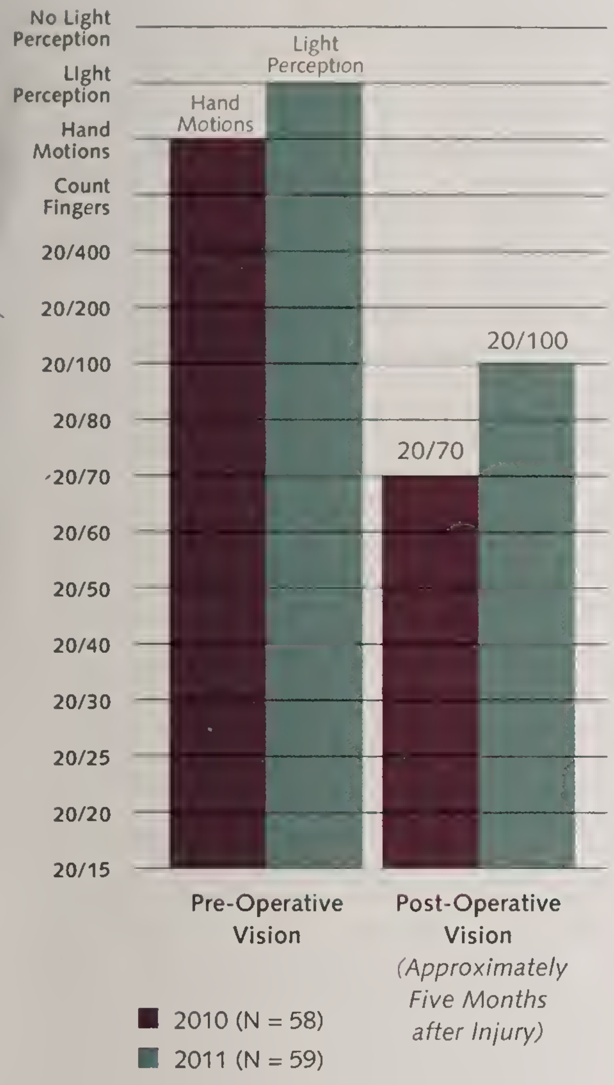




The photos on the left illustrate the right eye of a patient before and after eye trauma surgery. At presentation to the Mass. Eye and Ear Emergency Department, the patient's pre-operative vision was "hand motions" (left photo). The patient's post-operative vision was 20/20 (right photo).

Photos courtesy of Justin Kanoff, M.D.

Eye Trauma Surgery: Post-Operative Median Vision



During the 2011 calendar year, 98 patients had open-globe repair by the Mass. Eye and Ear Eye Trauma Service. Of these 98 patients, visual acuity at presentation was recorded in 96 patients. Visual acuity was not possible in two patients: one suffered from dementia and one was an infant. Fifty-nine patients had five months or more of follow-up, and only these individuals were analyzed for pre- and post-operative vision. Patients with less than five months of follow-up were excluded from the analysis. During the 2011 calendar year, the median pre-operative vision was "light perception," and the median post-operative vision at the closest follow-up visit after five months was 20/100. When all 2011 open-globe repairs were included in the analysis regardless of follow-up time, the best post-operative median vision was 20/40.

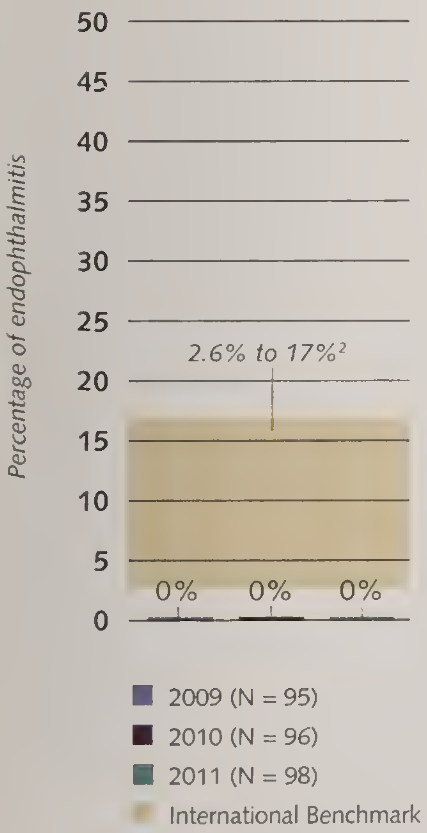
Eye trauma surgical results from calendar year 2011 were similar to those from calendar year 2010, when data collection for median vision began. During 2010, the Trauma Service performed 96 open-globe repairs. Of these 96 patients, 58 patients had five months or more of follow-up and were analyzed for pre- and post-operative vision. In 2010, the median pre-operative vision was "hand motions" and the median post-operative vision at the closest follow-up visit after five months was 20/70.

Reference: [1]Shah AS, Andreoli MT, Andreoli CM, Heidary G. "Pediatric open-globe injuries: A large scale, retrospective review." Poster presented at the 37th Annual Meeting of the American Association for Pediatric Ophthalmology and Strabismus, San Diego, California, USA, March 30-April 3, 2011. Abstract available in J AAPOS 2011; 15(1), e29.

In a retrospective review of 124 pediatric open-globe injuries managed by the Eye Trauma Service and/or Retina Service between February 1999 and April 2009, analysis showed a median visual acuity at presentation of "hand motions" (N = 123), and a final best-corrected median visual acuity of 20/40 (N = 124) at ten months median follow-up.[1]

Visual prognosis after ocular trauma is highly dependent on the severity of the initial trauma, but these data show that patients suffering from traumatic eye rupture can regain useful vision after surgery.

Eye Trauma Surgery: Rates of Endophthalmitis after Open-Globe Repair



During calendar year 2011, 98 patients had open-globe repair by the Eye Trauma Service, with no cases of endophthalmitis reported. This is similar to calendar year 2009 and 2010 results, where no cases of endophthalmitis were reported among the 95 and 96 patients, respectively, who had open-globe repair by the Eye Trauma Service.

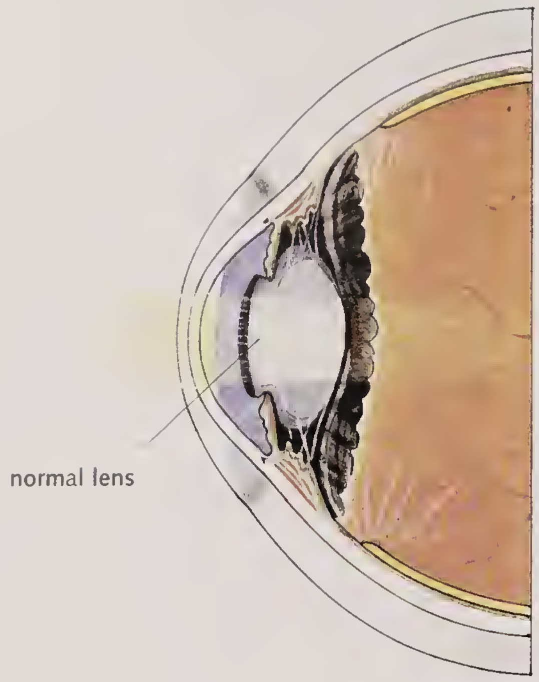
During a 7.5-year period (January 2000 to July 2007), 675 open-globe injuries were treated at Mass. Eye and Ear. Intravenous vancomycin and ceftazidime were started on admission and stopped after 48 hours. Patients were discharged on topical antibiotics, corticosteroids, and cycloplegia. Of these 675 eyes, 558 had at least 30 days of follow-up (mean, 11 months). The overall percentage of endophthalmitis was 0.9% (or 5/558 cases). Three were culture-positive cases, and two were culture-negative cases.[2]

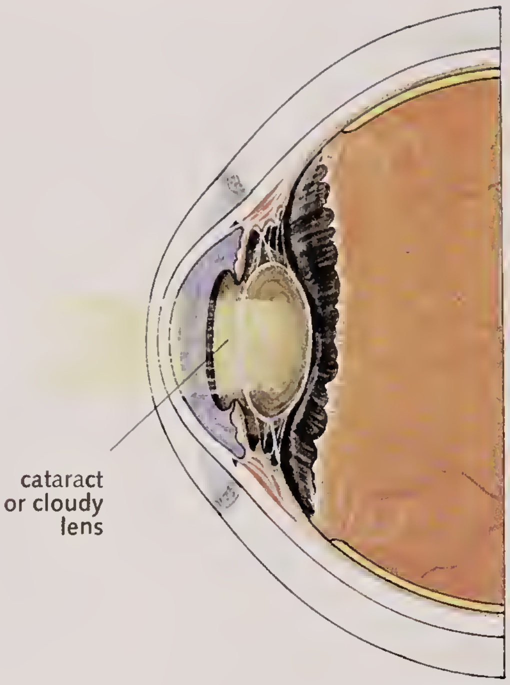
The standard Mass. Eye and Ear protocol for eye trauma (i.e. surgical repair by a dedicated trauma team and 48 hours of intravenous antibiotics) is associated with post-traumatic endophthalmitis in fewer than one percent of cases. A review of the literature suggests that endophthalmitis rates around the world range from 2.6% to 17%. The United States National Eye Trauma Registry has reported an endophthalmitis rate of 6.9% after open-globe repair.[2]

Reference: [2]Andreoli CM, Andreoli MT, Kloek CE, Ahuero AE, Vavvas D, Durand ML. Low rate of endophthalmitis in a large series of open globe injuries. Am J Ophthalmol 2009; 147(4): 601-608.

Endophthalmitis rates after eye trauma surgery performed at Mass. Eye and Ear are the lowest rates reported in the country. Based on the Mass. Eye and Ear experience and the low percentage of cases with endophthalmitis, we recommend that institutions adopt a standardized protocol for treating open-globe injuries and consider the use of prophylactic systemic antibiotics.[2]

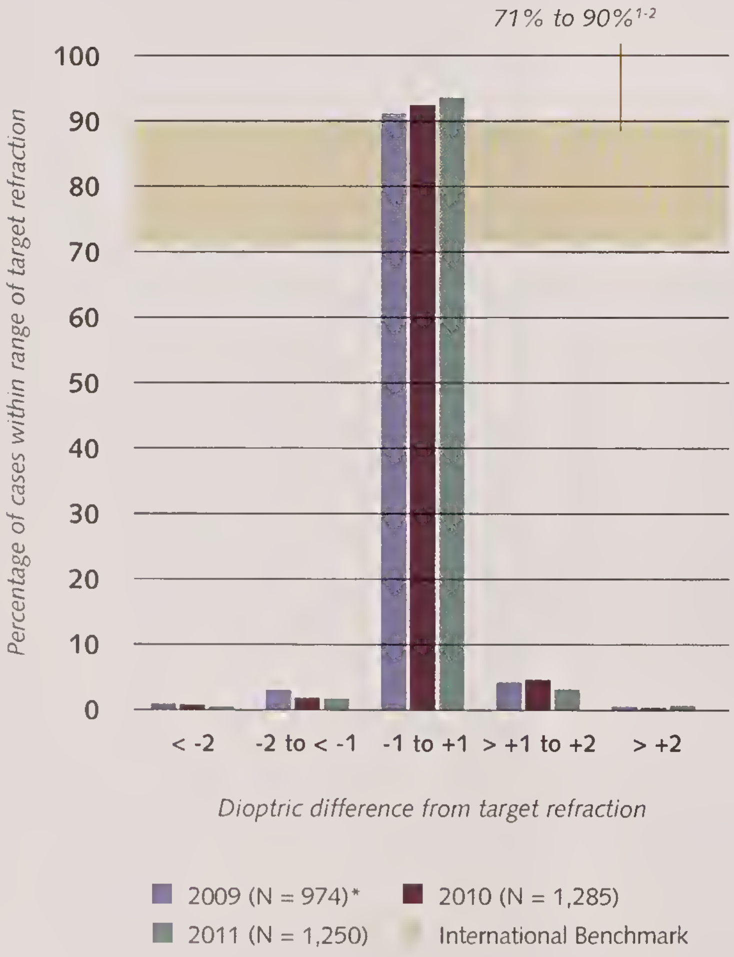
Cataract Surgery





The Comprehensive Ophthalmology and Cataract Consultation Service at Mass. Eye and Ear provides a full spectrum of integrated patient care, from annual eye exams and continued ophthalmology care, to subspecialty referrals. The most common surgery that we perform is cataract extraction with intraocular lens implantation.

Cataract Surgery: Achieving Target Refraction (Spherical Equivalent)



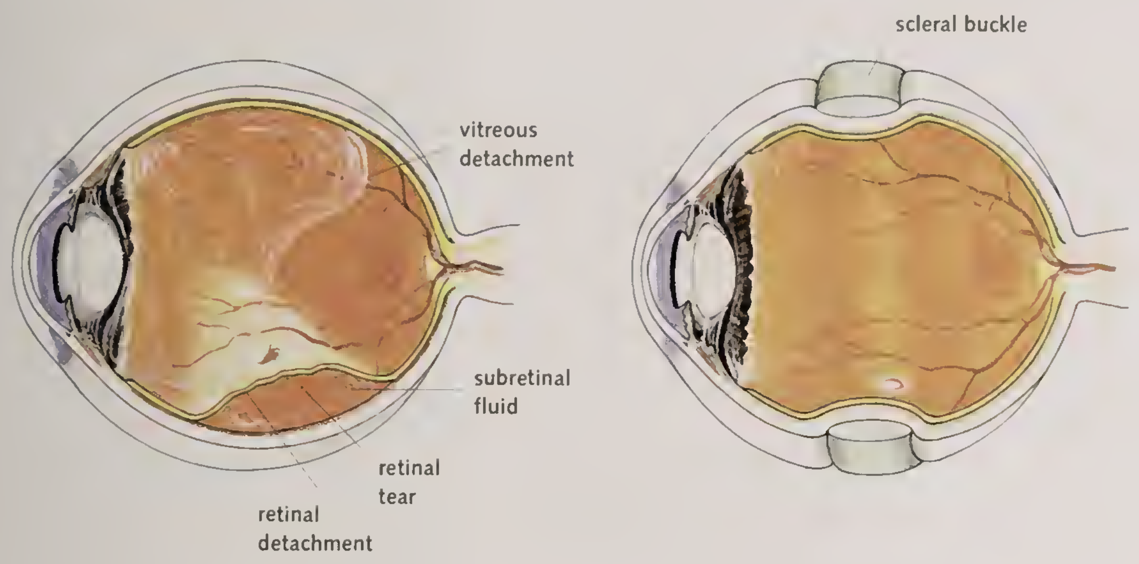
*July 2008-July 2009

During the 2011 calendar year, the Comprehensive Ophthalmology and Cataract Consultation Service performed cataract surgery on 1,280 eyes at the Mass. Eye and Ear main Boston campus. This chart depicts the results of the 1,250 eyes that had at least one month of follow-up data. Ninety-four percent (1,180/1,250) of cataract patients achieved within one diopter of target refraction after cataract surgery. This is similar to the 2010 calendar year period, during which 1,369 cataract surgeries were performed; and of the 1,285 eyes with at least one month of follow-up data, 93.1% (1,196/1,285 eyes) achieved within one diopter of target refraction. During the July 2008 to June 2009 period, 1,109 cataract surgeries were performed; and of the 974 eyes with at least three months of follow-up data, 91.8% (894/974 eyes) achieved within one diopter of target refraction after cataract surgery.

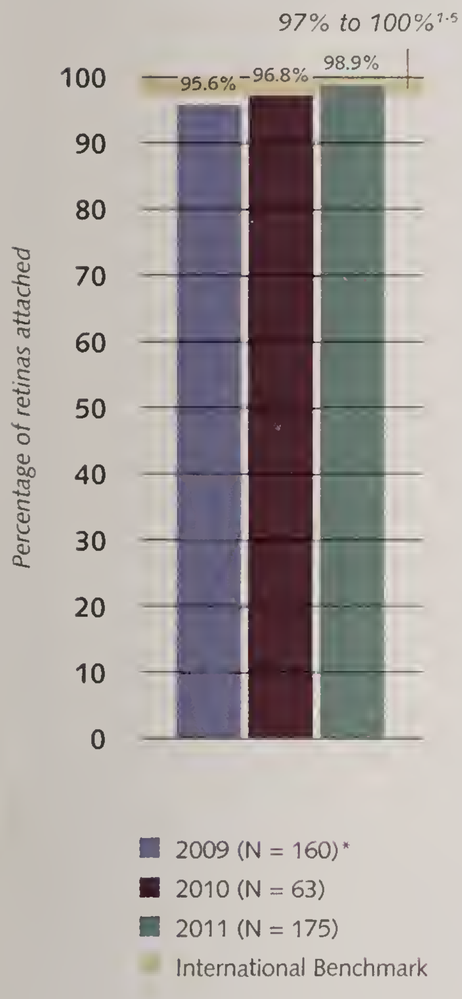
References: [1]Kugelberg M, Lundström M. Factors related to the degree of success in achieving target refraction in cataract surgery: Swedish National Cataract Register study. J Cataract Refract Surg 2008; 34(11): 1935-1939.
[2]Cole Eye Institute. Outcomes 2010.

Mass. Eye and Ear cataract surgery success rates continue to exceed international benchmarks.

Retinal Detachment and Retinal Detachment Repair



Retina Surgery: Retinal Reattachment Rate at Six Months for Primary Rhegmatogenous Retinal Detachment



*March 2008-February 2009

Primary rhegmatogenous retinal detachment is one of the most common retinal conditions that require surgical repair by the Mass. Eye and Ear Retina Service. The number of retinal detachment repairs performed by the Mass. Eye and Ear Retina Service increased from 313 retinal detachment repairs on 248 patients in calendar year 2010 to 376 retinal detachment repairs on 312 patients in calendar year 2011. Between March 2008 and February 2009, primary rhegmatogenous retinal detachment was the most common retinal diagnosis (43.9% or 160/364) in surgery patients treated by the Retina Service.

Of the 179 rhegmatogenous retinal detachments during calendar year 2011, four were excluded due to lack of follow-up data after post-op week one. This left 175 eyes for analysis. Retinal reattachment was successfully achieved in 98.9% (173/175) of patients with a primary rhegmatogenous detachment during calendar year 2011; this success rate reflects patients who had one or more surgeries, which may have included pars plana vitrectomy, scleral buckle, and pneumatic retinopexy. These success rates are similar to calendar year 2010 results, where retinal reattachment was successfully achieved in 96.8% (61/63) of patients age 18 or older with a primary rhegmatogenous retinal detachment, and the results between March 2008 and February 2009, when retina surgeons were successful in reattaching the retina in 95.6% (153/160) of cases.

International benchmarks report success rates of rhegmatogenous retinal detachment repair after one or more surgeries ranging from 97% to 100%.[1-5]

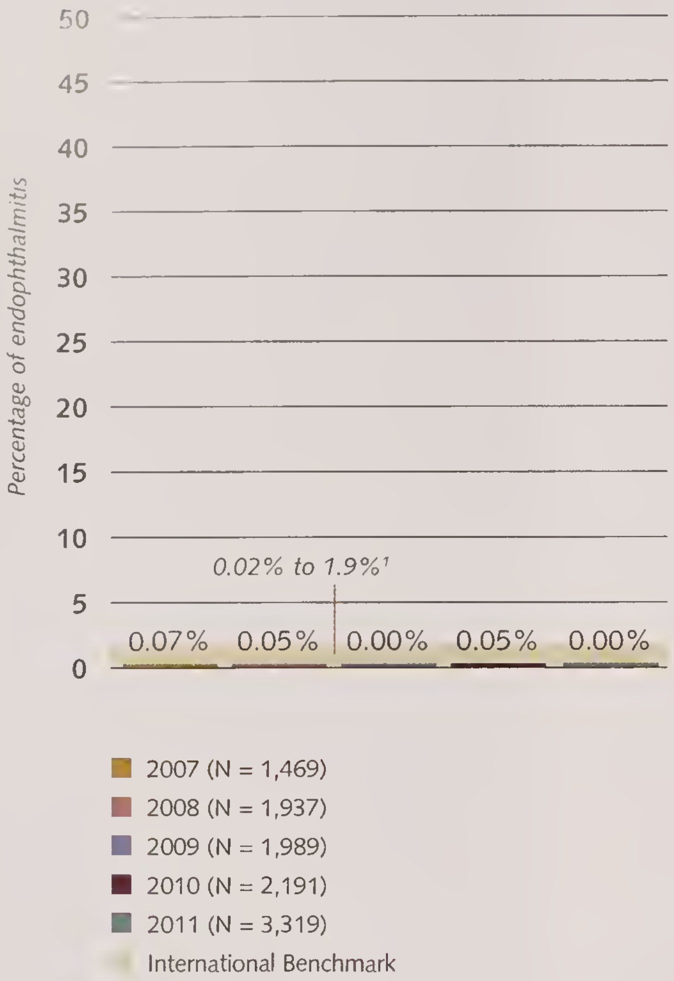
The Retina Service at Mass. Eye and Ear is one of the largest subspecialty groups of its kind in the country. Our clinicians are highly skilled at diagnosing and treating a full range of ocular diseases, including macular degeneration, diabetic retinopathy, retinal detachments, ocular tumors, intraocular infections, and severe ocular injuries.

This analysis includes only operations for primary rhegmatogenous retinal detachments. Exclusion criteria included retinal detachments that were non-rhegmatogenous, retinal detachments of unclear mechanism, rhegmatogenous retinal detachments in the setting of open-globe injuries, eyes with prior vitreoretinal surgery, and eyes with proliferative vitreoretinopathy.

With a 99% success rate for primary rhegmatogenous retinal detachment repair after one or more surgeries, Mass. Eye and Ear retina doctors have maintained high success rates for rhegmatogenous retinal detachment repair.

References: [1]*Han DP, Mohsin NC, Guse CE, Hartz A, Tarkanian CN, Southeastern Wisconsin Pneumatic Retinopexy Study Group. Comparison of pneumatic retinopexy and scleral buckling in the management of primary rhegmatogenous retinal detachment. Am J Ophthalmol 1998; 126(5), 658-668.* [2]*Avitabile T, Bartolotta G, Torrisi B, Reibaldi A. A randomized prospective study of rhegmatogenous retinal detachment cases treated with cryopexy versus frequency-doubled nd:yag laser-retinopexy during episcleral surgery. Retina 2004, 24(6), 878-882.* [3]*Azad RV, Chanana B, Sharma YR, Vohra R. Primary vitrectomy versus conventional retinal detachment surgery in phakic rhegmatogenous retinal detachment. Acta Ophthalmol Scand 2007; 85, 540-545.* [4]*Sullivan PM, Luff AJ, Aylward GW. Results of primary retinal reattachment surgery: a prospective audit. Eye 1997; 11, 869-871.* [5]*Day S, Grossman DS, Mruthyunjaya P, Sloan FA, Lee PP. One-year outcomes after retinal detachment surgery among Medicare beneficiaries. Am J Ophthalmol 2010; 150(3): 338–345.*

Retina Surgery:
Rates of Endophthalmitis after Intravitreal Injection

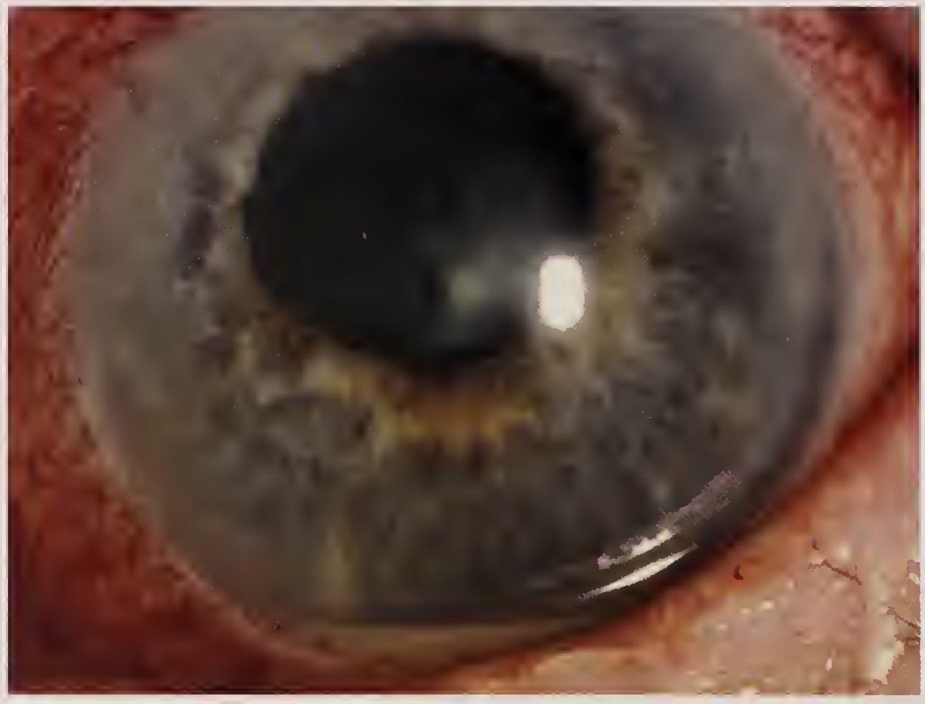


In order to identify cases of acute endophthalmitis, a retrospective review was performed of all consecutive eyes that underwent intravitreal injections from January 1, 2007 to December 31, 2011. During this five-year period, 10,905 intravitreal injections were performed. Of these injections, 3,319 took place during the 2011 calendar year, which had zero reported cases of endophthalmitis (0%).

Over a five-year period, the overall incidence rate of endophthalmitis subsequent to intravitreal injection was 0.028% (three of 10,905 injections). In one case of acute endophthalmitis, the patient presented three days after the injection. Bacterial cultures revealed coagulase-negative Staphylococcus species. Treatment of the infection resulted in a best-corrected visual acuity at 19 months follow-up of 20/25 (baseline 20/30). In the second case, the patient presented four days after the injection. Gram stain showed moderate bacteria, but cultures were negative. After treatment, best-corrected visual acuity at two years follow-up was 20/50–1 (baseline 20/32-2). In the third case, the patient presented with delayed onset endophthalmitis one month after the injection. Vitreous culture showed moderate Staphylococcus epidermidis, and an anterior chamber tap revealed no growth. After treatment, visual acuity with correction at seven months follow-up was 20/30+2 (baseline 20/25).

Reference: [1]Bhavsar et al. Risk of endophthalmitis after intravitreal drug injection when topical antibiotics are not required. Arch Ophthalmol 2009; 127(12): 1581-1583.

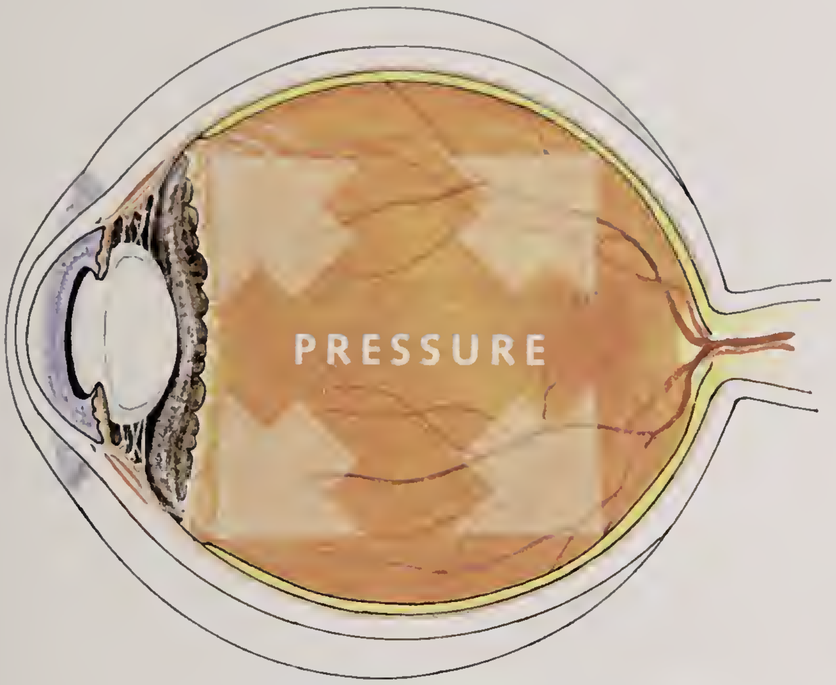
Acute endophthalmitis is a rare potential complication of intravitreal injections. The Mass. Eye and Ear intravitreal injection infection rate is one of the lowest reported rates compared to international benchmarks.



(left) Photograph of endophthalmitis

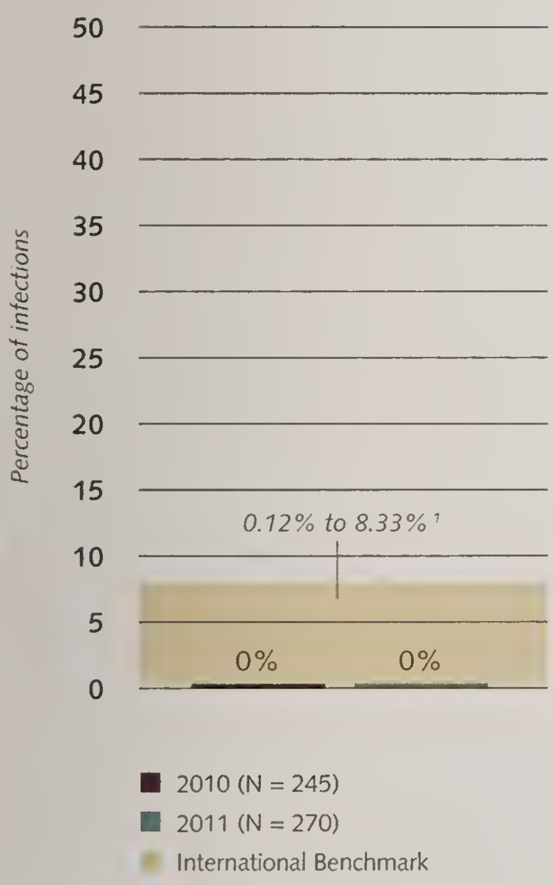
Photo courtesy of Lucy H. Young, M.D., Ph.D., F.A.C.S.

Glaucoma Surgery



Glaucoma is a group of disorders in which the main risk factor is elevated eye pressure. All glaucoma disorders are characterized by vision loss caused by damage to the optic nerve, which provides the pathway from the eyeball to the brain. Members of the Mass. Eye and Ear Glaucoma Consultation Service are trained in the most advanced laser and surgical procedures to treat and mitigate the symptoms of glaucoma.

Glaucoma Surgery: Trabeculectomy and Tube Shunt Infection Rates



The most common incisional surgeries performed by the Mass. Eye and Ear Glaucoma Consultation Service are trabeculectomy surgery and tube shunt surgery. Trabeculectomy surgery is the gold standard incisional surgery that is usually performed first in patients who require glaucoma surgery. The total number of trabeculectomy and tube shunt surgeries performed by the Glaucoma Consultation Service increased from 245 during calendar year 2010 to 270 during calendar year 2011.

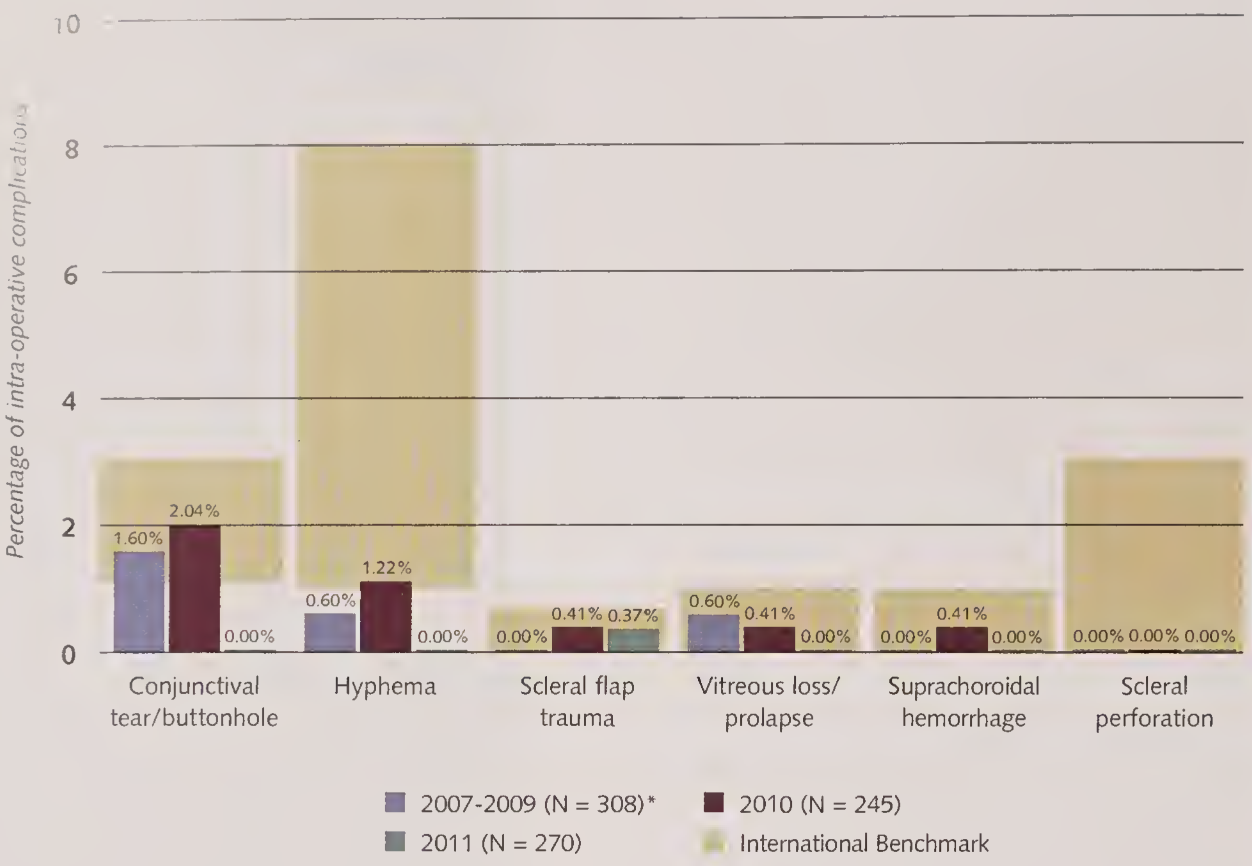
During the 2011 calendar year, the Glaucoma Consultation Service performed trabeculectomy surgery (with or without previous scarring) on 85 eyes and performed tube shunt surgeries (primary or revision) on 185 eyes. Zero cases of endophthalmitis were reported during this 12 month period. There were also no cases reported in calendar year 2010 when data collection began.

Complete success is defined as a zero percent infection rate per year. A review of the literature suggests that trabeculectomy and tube shunt infection rates range from 0.12% to 8.33%.[1]

Reference: [1]Ang GS, Varga Z, Shaarawy T. Postoperative infection in penetrating versus non-penetrating glaucoma surgery. Br J Ophthalmol 2010; 94(12): 1571-1576.

The Mass. Eye and Ear Glaucoma Consultation Service has one of the lowest trabeculectomy and tube shunt infection rates compared to international benchmarks.

Trabeculectomy and Glaucoma Implant Surgery: Intra-Operative Complications



*July 2007-July 2009

The Mass. Eye and Ear Glaucoma Consultation Service continues to maintain some of the lowest intra-operative complication rates compared to international benchmarks.

Of the 270 cases of trabeculectomy surgery or glaucoma implant surgery performed by the Glaucoma Consultation Service during the 2011 calendar year, 99.6% (269/270) of patients had no intra-operative complications. These results are better than calendar year 2010 results, where 95.5% (234/245) of trabeculectomy and tube surgeries had no intra-operative complications. These results are also similar to an earlier 24 month period between July 2007 and June 2009, where 97.1% (299/308) of eyes had no intra-operative complications from trabeculectomy or tube shunt surgery. These cases represented the 308 of 315 surgeries that had sufficient documentation to assess for intra-operative complications.

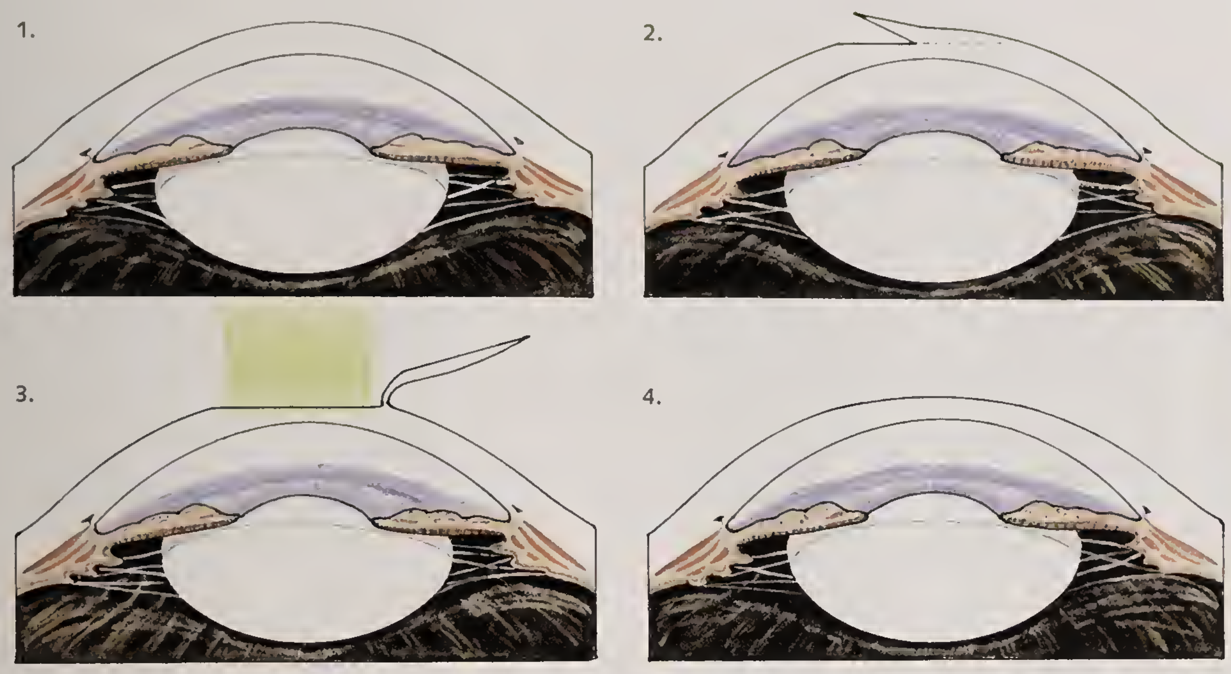
The 270 cases evaluated included:
74 trabeculectomies without scarring
11 trabeculectomies with previous scarring
150 primary tube surgeries
35 tube revisions

Mass. Eye and Ear 2011 complication rates:
Conjunctival tear/buttonhole: 0%
Hyphema: 0%
Scleral flap trauma: 0.37%
Vitreous loss (vitreous prolapse): 0%
Suprachoroidal hemorrhage: 0%
Scleral perforation: 0%

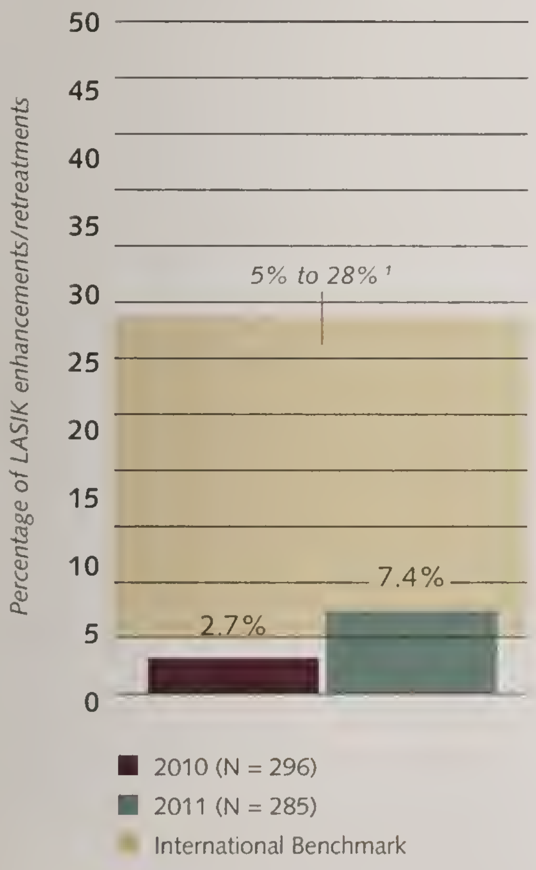
International benchmarks:[1-4]
Conjunctival tear/buttonhole: 1.1% - 3%
Hyphema: 1% - 8%
Scleral flap trauma: 0.7%
Vitreous loss (vitreous prolapse): 1%
Suprachoroidal hemorrhage: 0% - 1%
Scleral perforation: 0% - 3%

References: [1]Barton K, Gedde SJ, Budenz DL, Feuer WJ, Schiffman J. The Ahmed Baerveldt Comparison Study: methodology, baseline patient characteristics, and intraoperative complications. Ophthalmology 2011; 118(3): 435-442. [2]Jampel HD, Musch DC, Gillespie BW, Lichter PR, Wright MM, Guire KE. Perioperative complications of trabeculectomy in the Collaborative Initial Glaucoma Treatment Study (CIGTS). Am J Ophthalmol 2005; 140(1): 16-22. [3]Gedde SJ, Herndon LW, Brandt JD, Budenz DL, Feuer WJ, Schiffman JC. Surgical complications in the tube versus trabeculectomy study during the first year of follow-up. Am J Ophthalmol 2007; 143(1): 23-31. [4]Christakis PG, Tsai JC, Zurakowski D, Kalenak JW, Cantor LB, Ahmed IK. The Ahmed Versus Baerveldt Study: design, baseline patient characteristics, and intraoperative complications. Ophthalmology 2011; 118(11): 2172-2179.

Refractive Surgery



Refractive Surgery LASIK: Enhancement/Retreatment Rates at Six Months Follow-up



Of the 321 eyes that had LASIK (laser-assisted in situ keratomileusis) surgery during the 2011 calendar year, 285 had sufficient follow-up data for analysis. Of these 285 eyes, 7.4% (21/285) had an enhancement/retreatment procedure within six months. During the 2010 calendar year, only 2.7% (8/296) of eyes that had LASIK had an enhancement/retreatment procedure within six months. Prior to 2010, LASIK enhancement/retreatment rates were measured using three months follow-up data; the retreatment rates reported for the 2010 and 2011 calendar years reflect data collected at six months after surgery.

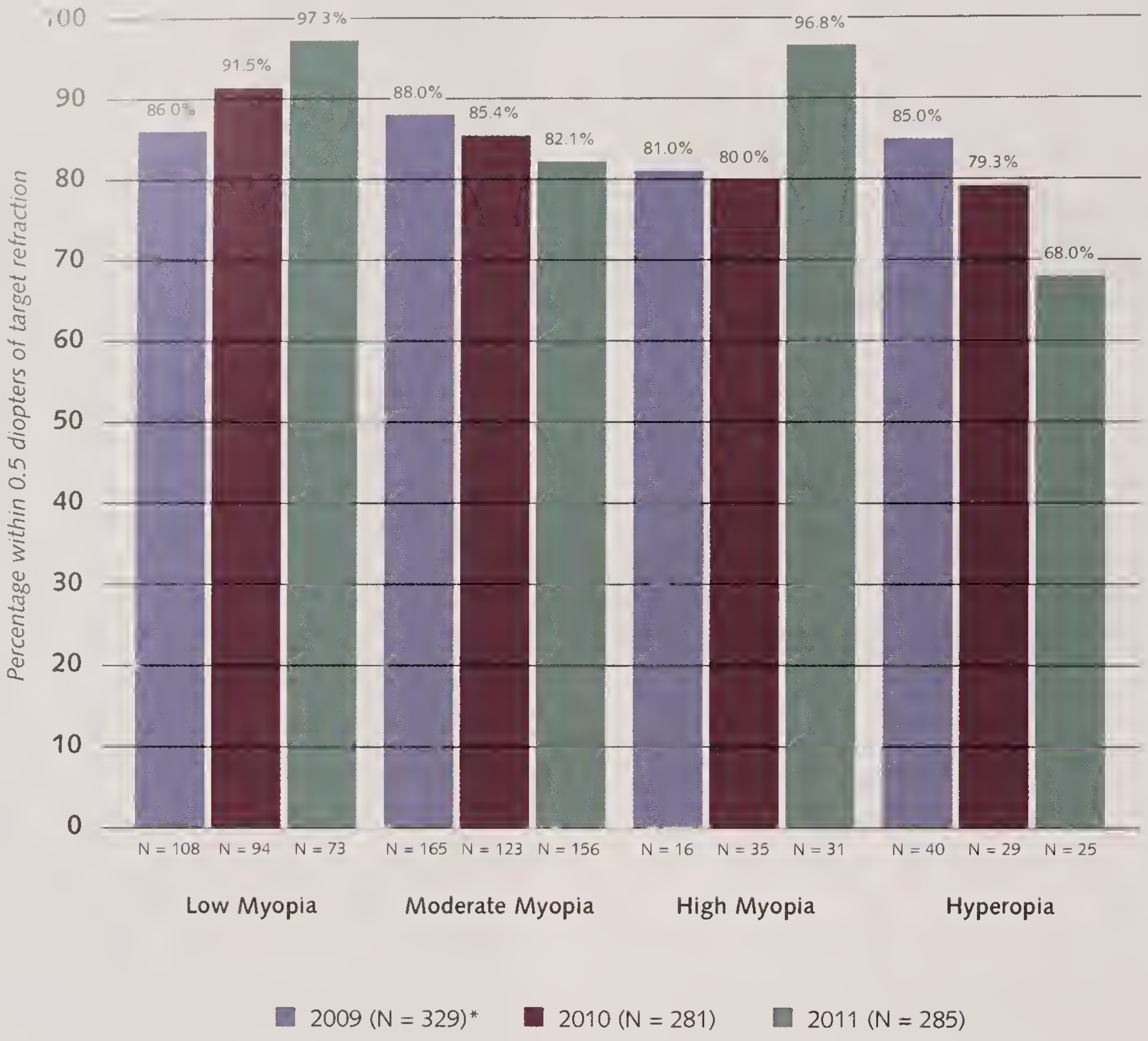
LASIK retreatment rates of between 5% and 28% have been reported in the literature.[1]

Reference: [1]Hersh PS, Fry KL, Bishop DS. Incidence and associations of retreatment after LASIK. Ophthalmology 2003; 110(4): 748-754.

Refractive surgery, commonly known as laser vision correction, is a term given to surgical procedures designed to correct certain visual problems such as myopia (nearsightedness), hyperopia (farsightedness), and astigmatism. The Mass. Eye and Ear Cornea and Refractive Surgery Service offers a number of refractive procedures, the most common of which are LASIK (laser-assisted in situ keratomileusis) and PRK (photorefractive keratectomy).

The Mass. Eye and Ear Cornea and Refractive Surgery Service has some of the lowest enhancement/retreatment rates in the country.

Refractive Surgery LASIK: Achieving Target Refraction (Spherical Equivalent)



*July 2008-July 2009

During the 2011 calendar year, 285 of the 321 eyes that had LASIK (laser-assisted in situ keratomileusis) surgery had sufficient follow-up data for analysis. Sufficient follow-up was defined as at least one month of follow-up for myopia and three months follow-up for hyperopia. This is similar to 2010 calendar year data, where 281 of the 296 eyes that had LASIK surgery had sufficient follow-up data for analysis. These surgical numbers are slightly less than an earlier one year period between July 2008 and June 2009, where 329 eyes that had LASIK had sufficient follow-up for analysis.

In calendar year 2011, the overall LASIK success rate for achieving within 0.5 diopters of target refraction for both myopes and hyperopes was 86.3% (246/285 eyes). The success rate for all myopes was 88.1% (229/260 eyes) and for hyperopes was 68% (17/25 eyes). Compared to an overall success rate of 86.1% (242/281) for myopes and hyperopes in calendar year 2010 and 86.6% (285/329) between July 2008 and June 2009, the Mass. Eye and Ear Cornea and Refractive Surgery Service continued to maintain a high overall success rate of 86.3% for LASIK surgery in 2011.

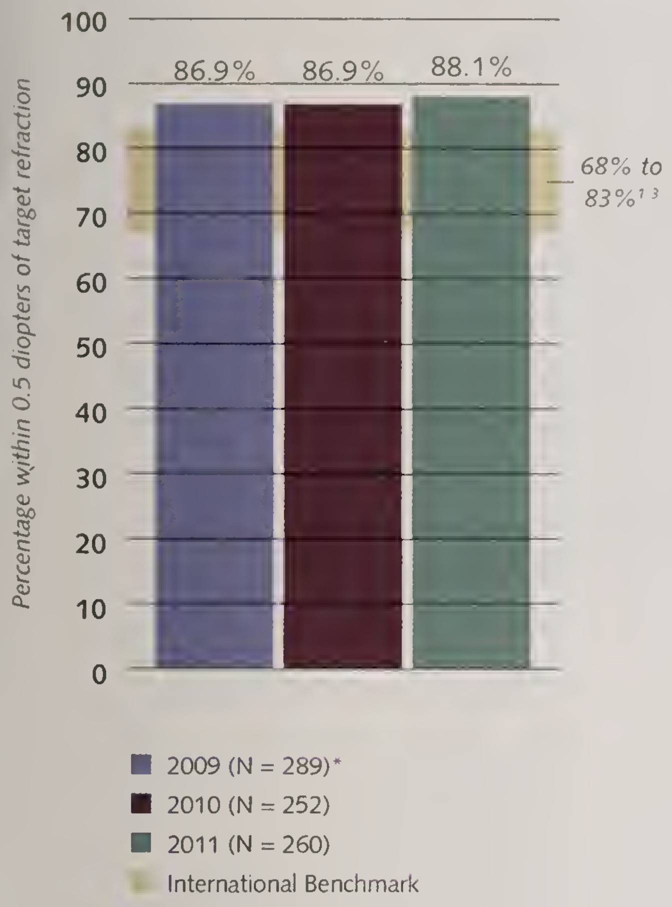
Low Myopia
less than 3 diopters of sphere

Moderate Myopia
3 to <7 diopters of sphere

High Myopia
7 to 10 diopters of sphere

Hyperopia
0 to 7 diopters of sphere

Refractive Surgery LASIK for Myopia: Achieving Target Refraction (Spherical Equivalent)



*July 2008-June 2009

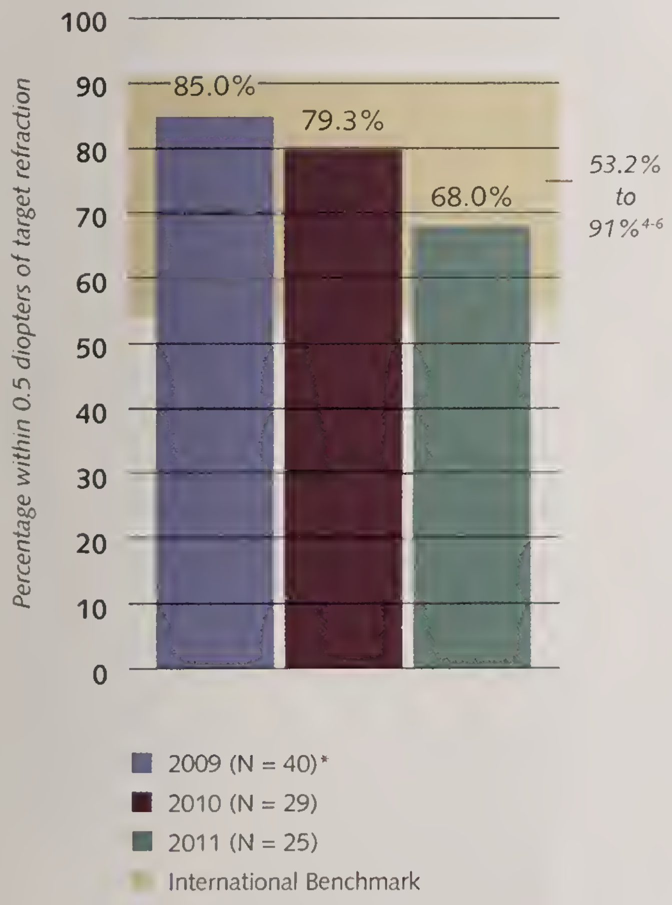
The LASIK (laser-assisted in situ keratomileusis) success rate for myopia at one month was 88.1% (229/260 eyes) for calendar year 2011. These 2011 calendar year results were similar to the success rates of 86.9% (219/252 eyes) for calendar year 2010 and 86.9% (251/289) for the 12 month period between July 2008 and June 2009. The Mass. Eye and Ear Cornea and Refractive Surgery Service continues to maintain high LASIK surgery success rates for myopia.

National benchmark data from FDA trials for LASIK for myopia showed that 71.6% of eyes resulted in a refractive error within ±0.5 diopters of the intended target correction. Further review of the literature suggests that after LASIK surgery for myopia, approximately 68% to 83% of eyes achieve within ±0.5 diopters of the intended target correction.[1-3]

Reference: [1]Bailey MD and Zadnick K. Outcomes of LASIK for myopia with FDA-approved lasers. Cornea 2007; 26(3), 246-254. [2]Yuen LH, Chan WK, Koh J, Mehta JS, Tan DT. A 10-year prospective audit of LASIK outcomes for myopia in 37,932 eyes at a single institution in Asia. Ophthalmology 2010; 117(6): 1236–1244. [3]Mrochen M, Kaemmerer M, Seiler T. Clinical results of wavefront-guided laser in situ keratomileusis 3 months after surgery. J Cataract Refract Surg 2001; 27(2): 201–207.

The Mass. Eye and Ear Cornea and Refractive Surgery Service continues to exceed international benchmarks for success rates after LASIK surgery for myopia.

Refractive Surgery LASIK for Hyperopia: Achieving Target Refraction (Spherical Equivalent)



*July 2008-June 2009

Of the 50 eyes that had LASIK surgery for hyperopia during the 2011 calendar year, 25 had three months or more of follow-up data for analysis. The overall 2011 LASIK success rate for achieving within 0.5 diopters of target refraction was 68% (17/25 eyes) for hyperopia. The Mass. Eye and Ear Cornea and Refractive Surgery Service's success rate in 2010 was 79.3% (23/29 eyes) for hyperopia and was 85% (34/40) between July 2008 and June 2009.

Reference: [4]Jaycock PD, O'Brart DPS, Rajan MS, Marshall J. 5-year follow-up of LASIK for hyperopia. Ophthalmology 2005; 112(2): 191–199. [5]Keir NJ, Simpson T, Hutchings N, Jones L, Fonn D. Outcomes of wavefront-guided laser in situ keratomileusis for hyperopia. J Cataract Refract Surg 2011; 37(5): 886–893. [6]Cole Eye Institute. Outcomes 2010.

A review of the literature suggests that the success rate for achieving within 0.5 diopters of the intended target correction after LASIK for hyperopia ranges between 53.2% and 91%.[4-6]

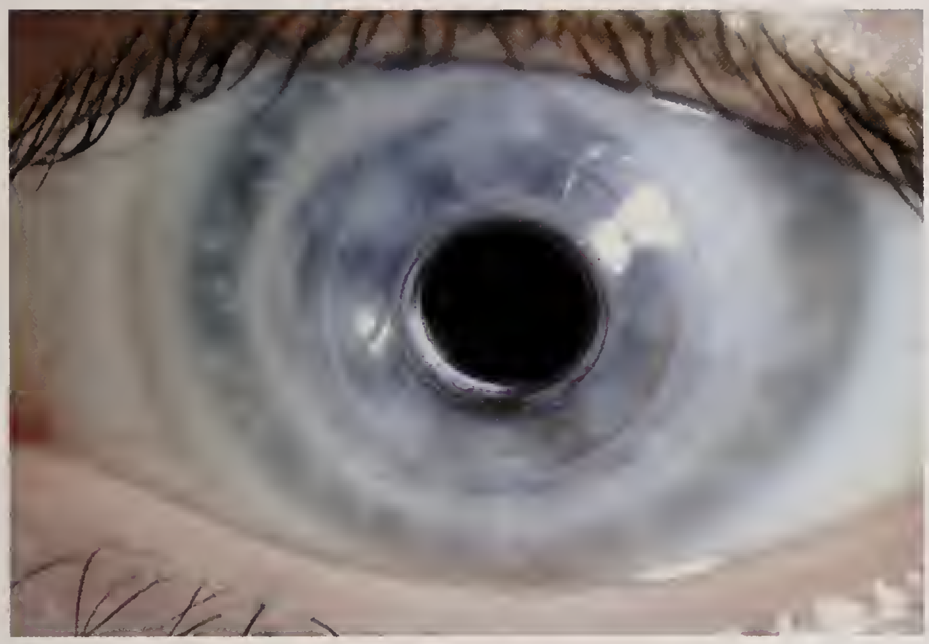
Seeing the Outcomes of an Independent Life

Mercy, artificial cornea patient

Mercy Muzumara was a young mother from Zambia caring for three children when she lost her sight. She developed severe scarring on her corneas following an adverse reaction to an antibiotic. Recently widowed, Mercy had difficulty taking care of herself and her children. She was forced to move in with relatives. Doctors in Zambia told Mercy there wasn't anything they could do to help her.

But there was help for Mercy at Mass. Eye and Ear, thanks to a device developed at the hospital: The Boston Keratoprosthesis (KPro) or artificial cornea. Mass. Eye and Ear's Dr. Claes Dohlman spent his career developing the technology. Cornea specialist Dr. James Chodosh implanted the Kpro that restored Mercy's sight. After surgery, Mercy travelled back home to Zambia, where she was able to see her children's faces for the first time in three years.

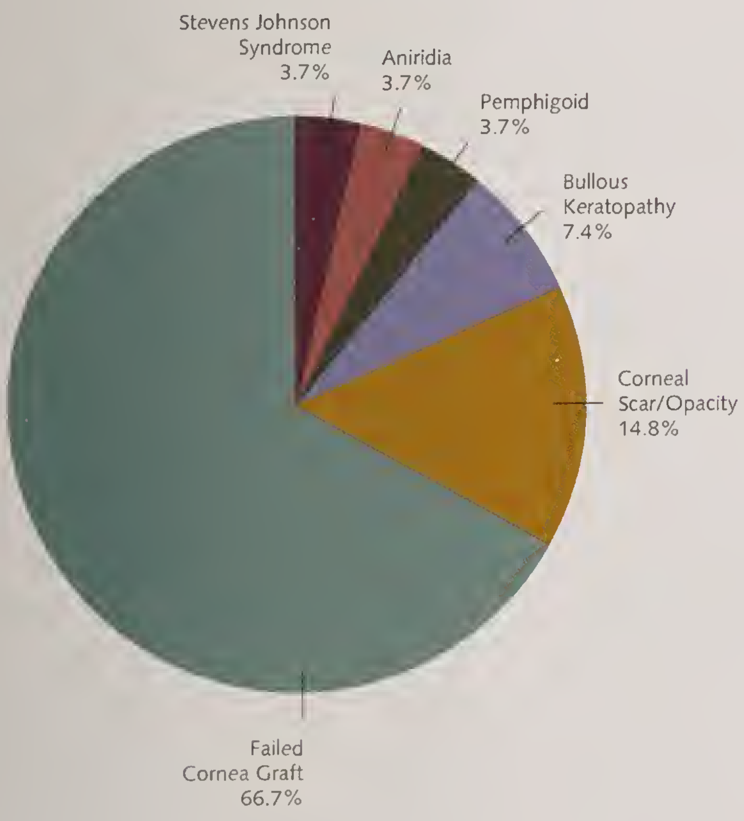
Cornea Surgery



(left) Photograph of Keratoprosthesis (KPro)

Photo courtesy of Claes Dohlman, M.D., Ph.D.

Keratoprosthesis (KPro) Surgery: Surgical Indications



N = 27

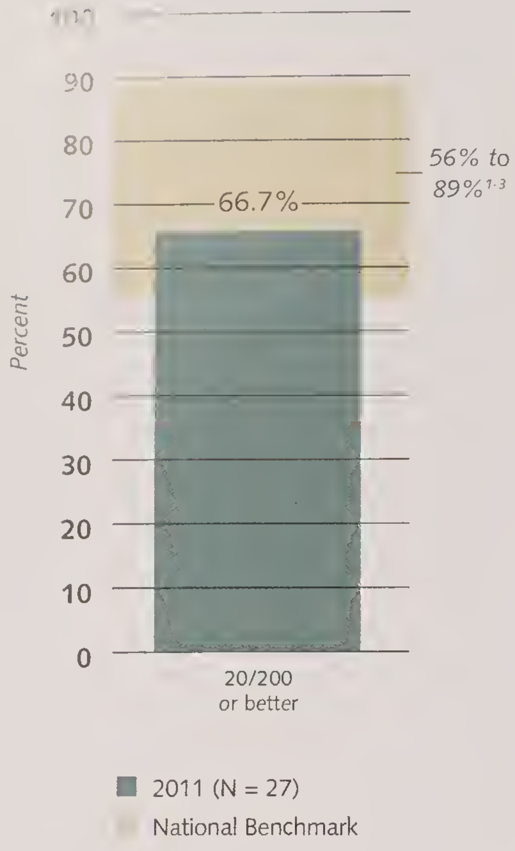
Thirty-three patients received the type 1 Boston Keratoprosthesis (KPro) during calendar year 2011, the first 12 month period for which surgical indications data was reported. Of these 33 patients, 28 (84.8%) received a keratoprosthesis for the first time. This analysis includes the 27 patients who underwent primary type 1 Boston KPro surgery and who had at least three months of follow-up data. Indications for KPro surgery included failed corneal grafts (18/27, 66.7%), corneal scar or opacity (4/27, 14.8%), bullous keratopathy (2/27, 7.4%), aniridia (1/27, 3.7%), Stevens Johnson Syndrome (1/27, 3.7%) and pemphigoid (1/27, 3.7%). The majority (19/27, 70.4%) of these patients had failed traditional corneal transplants in the past, but a few (8/27, 29.6%) received it as a primary procedure.

Reference: [1]Ament JD, Stryjewski TP, Ciolino JB, Todani A, Chodosh J, Dohlman CH. Cost-effectiveness of the Boston Keratoprosthesis. Am J Ophthalmol 2010; 149(2): 221-228.

The Boston KPro is an artificial cornea developed at Mass. Eye and Ear by Claes Dohlman, M.D., Ph.D., and colleagues. Dr. Dohlman is former Chief and Chair of the Department of Ophthalmology, and currently Emeritus Professor of Ophthalmology at Harvard Medical School.

In development since the 1960s, the KPro received FDA clearance in 1992. It is the most commonly used artificial cornea in the U.S. and the world, with more than 7,000 implantations to date. The KPro is reserved for patients blinded by corneal disease and for whom a standard corneal transplant is not a viable option.[1]

Keratoprosthesis (KPro) Surgery: Visual Outcomes



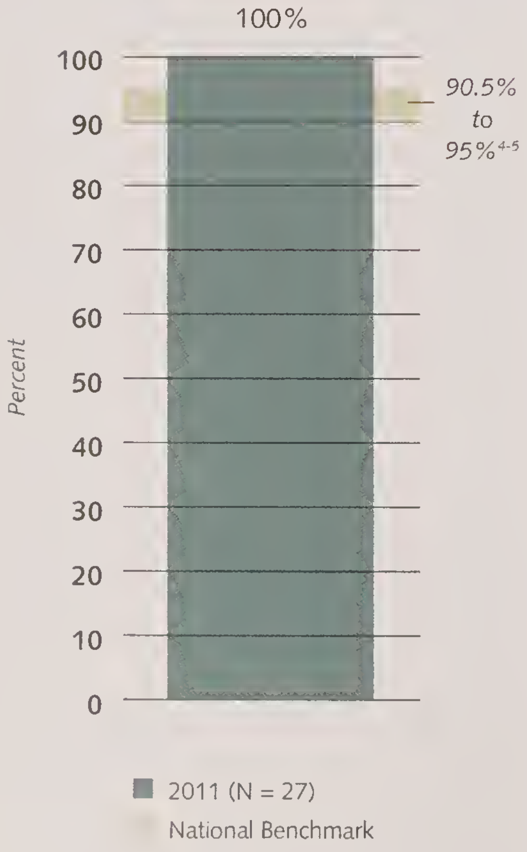
Of the 27 primary type 1 keratoprosthesis (KPro) surgeries for which three months of follow-up data were available for analysis, 18 (66.7%) achieved 20/200 vision or better at any point within the three month post-operative period or longer. This is comparable to national benchmarks of 56% to 89% reported in the literature.[1-3]

Of the nine patients who did not achieve a post-operative vision of 20/200 or better, eight patients had pre-existing severe retinal disease or advanced glaucoma, which limited visual prognosis. Only one of the nine patients had the potential to have 20/200 vision or better. This patient's vision was limited by a dense retroprosthetic membrane, which may be removed with laser treatment.

References: [1]Kang JJ, de la Cruz J, Cortina MS. Visual outcomes of Boston keratoprosthesis implantation as the primary penetrating corneal procedure. Cornea 2012; 0(0): 1-5. [2]Zerbe BL, Berlin MW, Ciolino JB. Results from the multicenter Boston type I keratoprosthesis study. Ophthalmology 2006; 113(10): 1779.e1-1779.e7. [3]Greiner MA, Li JY, Mannis MJ. Longer-term vision outcomes and complications with the Boston type 1 keratoprosthesis at the University of California, Davis. Ophthalmology 2011; 118(8): 1543-1550.

Prior to 2011, visual outcomes were reported for those patients who received primary type 1 KPro and had at least two years of follow-up data.

Keratoprosthesis (KPro) Surgery: Retention Rates



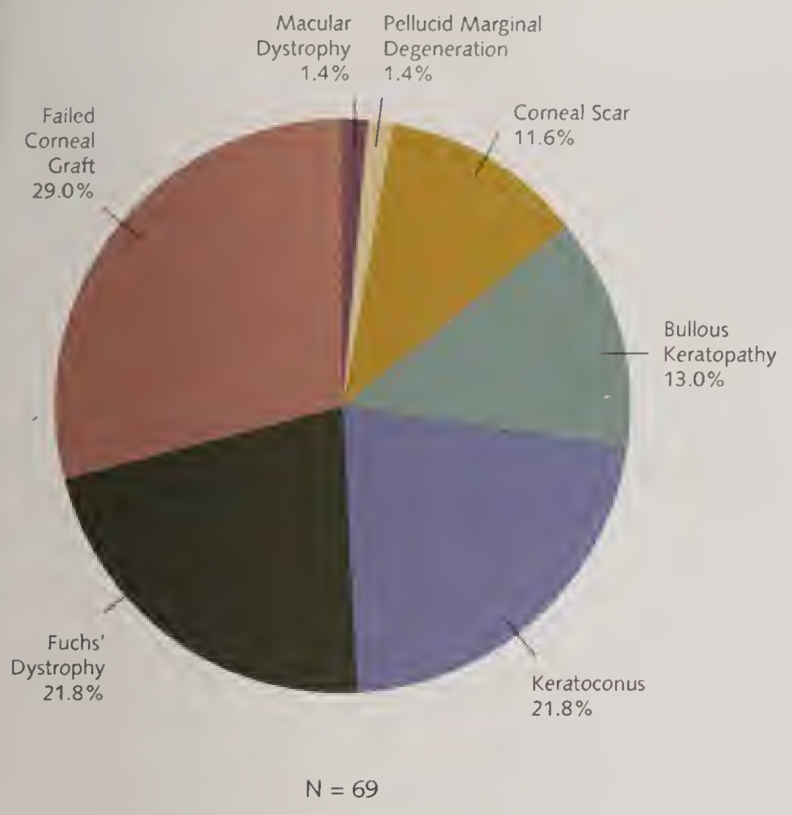
Of the 27 primary type 1 Boston KPro surgeries for which three months of follow-up data were available, 100% of patients retained the KPro at three months, and none needed replacement. A review of the literature showed that 90.5% to 95% of patients retain their KPro at six months.[4-5]

References: [4]Kang JJ, de la Cruz J, Cortina MS. Visual outcomes of Boston keratoprosthesis implantation as the primary penetrating corneal procedure. Cornea 2012; 0(0): 1-5. [5]Zerbe BL, Berlin MW, Ciolino JB. Results from the multicenter Boston type I keratoprosthesis study. Ophthalmology 2006; 113(10): 1779.e1-1779.e7.

Mass. Eye and Ear success rates exceed the national benchmarks for successful device retention following type 1 KPro surgery.

Calendar year 2011 was the first 12 month period for which retention rate data was reported.

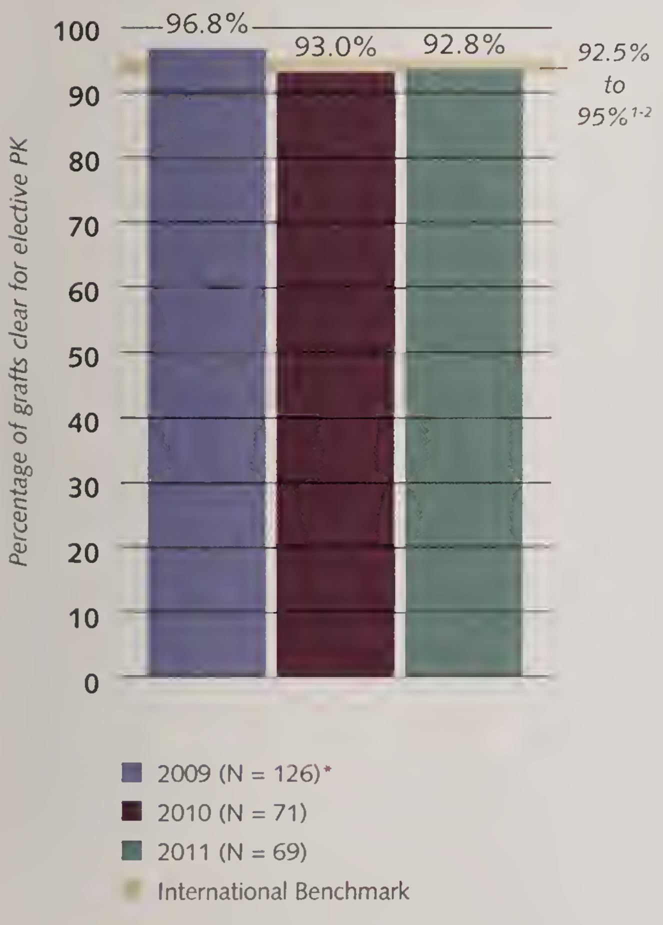
Cornea Surgery: Surgical Indications for Penetrating Keratoplasty (PK)



The current analysis included only elective penetrating keratoplasties that were performed by the Mass. Eye and Ear Cornea and Refractive Surgery Service and had at least three months of follow-up data. Elective penetrating keratoplasties included first time grafts in uninflamed host beds as well as those performed in eyes at high risk of rejection. Diagnoses associated with elective penetrating keratoplasties included Fuchs' dystrophy (15/69, 21.8%), keratoconus (15/69, 21.8%), corneal scar (8/69, 11.6%), failed corneal graft (20/69, 29.0%), bullous keratopathy (9/69, 13.0%), macular dystrophy (1/69, 1.4%) and pellucid marginal degeneration (1/69, 1.4%). Patients were excluded who had non-elective penetrating keratoplasties, which were performed emergently for indications such as corneal perforation and severe microbial keratitis unresponsive to medical therapy. Also excluded were penetrating keratoplasties done in combination with retinal or glaucoma surgeries.

Cornea transplant surgery provides clear cornea tissue from a donor to replace diseased host tissue.

Cornea Surgery: Clear Corneal Grafts after Penetrating Keratoplasty (PK) Surgery at Three Months Follow-up



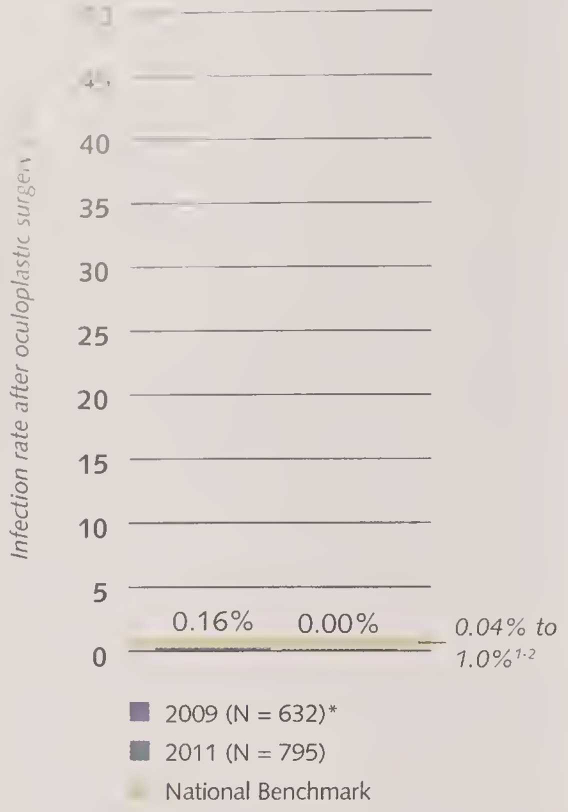
*July 2008-June 2009

During the 2011 calendar year, 96 full thickness PKs were performed. Eight of 96 (8.3%) were performed in combination with complex retinal or glaucoma procedures; seven of 96 (7.3%) did not have sufficient three month follow-up data. Of the 81 PKs for which three months follow-up data was available for analysis, 69 (85.2%) were elective and 12 (14.8%) were non-elective. Sixty-four of the 69 elective PKs (92.8%) performed during the calendar year 2011 achieved surgical success, which is defined as a graft at three months follow-up with minimal (to no) clinical edema and which possesses clarity sufficient to permit the examiner to have an unencumbered view of the interior of the eye including iris details. Mass. Eye and Ear success rates are comparable to the international benchmark rates reported in the literature.[1-2] In addition, during the calendar year 2010, 66 of 71 (93.0%) elective PKs achieved surgical success; and from July 2008 to July 2009, 122 of 126 (96.8%) eyes achieved surgical success.

Reference: [1] Vail A, Gore SM, Bradley BA, Easty DL, Rogers CA. Corneal graft survival and visual outcome: a multicenter study. Ophthalmology 1994; 101(1), 120-127. [2] Price MO, Thompson Jr RW, Price Jr. FW. Risk factors for various causes of failure in initial corneal grafts. Arch Ophthalmol 2003; 121(8): 1087-1092.

The number of full-thickness penetrating keratoplasties (PKs) performed by the Cornea and Refractive Surgery Service at Mass. Eye and Ear was 112 in calendar year 2010, and 96 in calendar year 2011.

Oculoplastic Surgery: Incidence of Post-Operative Infection at Six Months Follow-up



*March 2008-February 2009

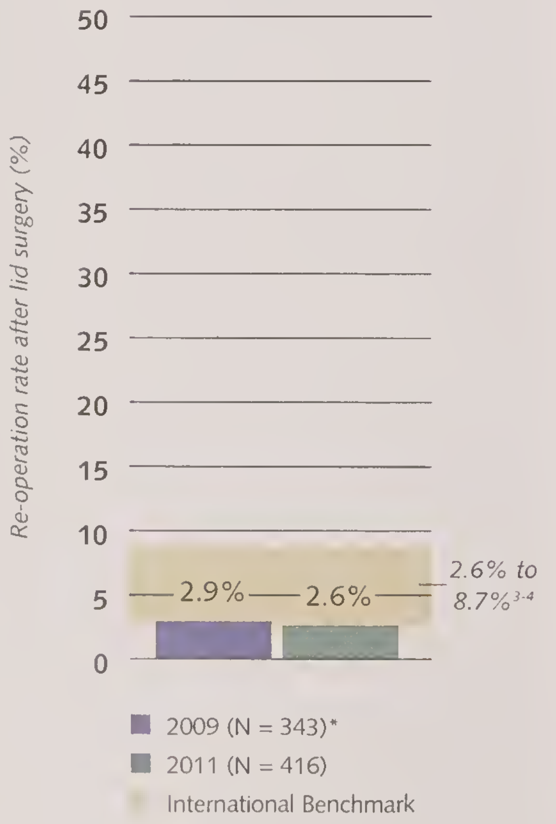
The incidence of post-operative infections following surgeries performed by the Mass. Eye and Ear Ophthalmic Plastic and Reconstructive Surgery Service is rare. Full-time staff performed 795 surgeries during the 2011 calendar year, and no patients developed a post-operative infection. Data collected from the twelve month period of March 2008 to February 2009 revealed a post-operative infection rate of only 0.16% (1/632). One patient developed MRSA (Methicillin-resistant Staphylococcus aureus) cellulitis following resection of an orbital tumor. The infection was successfully treated without permanent ocular sequelae.

A review of the literature suggests that infection rates after oculoplastic surgery range from 0.04% to 1.0%.[1-2]

Reference: [1]Lee EW, Holtebeck AC, Harrison AR. Infection rates in outpatient eyelid surgery. Ophthal Plast Reconstr Surg 2009; 25(2): 109-110. [2]Carter SR, Stewart JM, Khan J, Archer KF, Holds JB, Seiff SR, Dailey RA. Infection after blepharoplasty with and without carbon dioxide laser resurfacing. Ophthalmology 2003; 110(7): 1430–1432.

The Mass. Eye and Ear Ophthalmic Plastic and Reconstructive Surgery Service has one of the lowest infection rates when compared to national benchmarks.

Oculoplastic Surgery: Re-Operation Rate for Lid Surgeries at Six Months Follow-up



*March 2008-February 2009

During the 2011 calendar year, the Mass. Eye and Ear Ophthalmic Plastic and Reconstructive Surgery Service performed eyelid surgeries on 416 eyelids in 235 patients. Only 2.6% (11/416) of the eyelids required a second procedure within six months in order to achieve surgical success. These results are consistent with the 2.9% (10/343) of eyelids that required a lid re-operation after having had surgery during the March 2008 to February 2009 period. Re-operations involving eyelid retraction from thyroid eyelid disease were excluded from the analysis.

International benchmarks suggest that re-operation rates after lid surgery range from 2.6% to 8.7%.[3-4]

Reference: [3]Scoppettuolo E, Chadha V, Bunce C, Olver JM, Wright M. British Oculoplastic Surgery Society (BOPSS) National Ptosis Survey. Br J Ophthalmol 2008; 92(8): 1134–1138. [4]Melicher J, Nerad JA. Ptosis surgery failure and reoperation. In: Cohen AJ, Weinberg DA, eds. Evaluation and management of blepharoptosis. New York: Springer; 2011: 269-274.

The Mass. Eye and Ear Ophthalmic Plastic and Reconstructive Surgery Service continues to have one of the lowest re-operation rates for lid surgeries compared to international benchmarks.

Massachusetts Eye and Ear Infirmary

OTOLARYNGOLOGY DEPARTMENT

The Department of Otolaryngology at Mass. Eye and Ear has a long tradition in delivering excellence in clinical care, research and teaching. We provide comprehensive medical and surgical care in a variety of specialties in the field of otolaryngology, including: general otolaryngology, otology and neurotology, otoneurology, head and neck surgical oncology, laryngology, rhinology and sinus disease, pediatric otolaryngology, facial plastic and reconstructive surgery, facial nerve disorders, dermatology, laser reconstructive surgery, thyroid and parathyroid surgery.

We are also a center of research in these areas of expertise, with a long history of medical breakthroughs, including the discovery of stem cells in the adult inner ear, and the ability to screen infants at birth for deafness. Our physicians and scientists are committed to advancing the care provided to our patients.

MASS. EYE AND EAR DEPARTMENT OF OTOLARYNGOLOGY

- Primary teaching hospital and coordinating center for Harvard Medical School's Combined Residency Program in Otolaryngology – Head and Neck Surgery.
- Home to the Eaton-Peabody Laboratories of Auditory Physiology, Jenks Vestibular Physiology Laboratory, Jenks Vestibular Diagnostic Laboratory, Amelia Peabody Otoimmunochemistry Laboratory, Otopathology Laboratory, Norman Knight Center for Hyperbaric Medicine, Cochlear Implant Research Laboratory, National Temporal Bone, Hearing and Balance Pathology Resource Registry, Facial Nerve Center, Carolyn and Peter Lynch Center for Laser and Reconstructive Surgery, and the Tillotson Cell Biology Unit.

Clinical Affiliations

- Massachusetts General Hospital (MGH)
  - Mass. Eye and Ear physicians and audiologists provide comprehensive and subspecialty care, including consultations and coordination of inpatient consultations for urgent patient care concerns and newborn infant auditory screening.
- Brigham and Women's Hospital (BWH)
  - Mass. Eye and Ear provides otology/neurotology subspecialty support to the Otolaryngology Division of BWH.
- Massachusetts Eye and Ear, Braintree; Massachusetts Eye and Ear, Concord; Massachusetts Eye and Ear, Duxbury; Massachusetts Eye and Ear, Newton; Massachusetts Eye and Ear, Stoneham; Massachusetts Eye and Ear, Quincy; Massachusetts Eye and Ear, Weymouth.
  - Mass. Eye and Ear physicians and audiologists provide comprehensive care throughout the Greater Boston area.
- Braintree Rehabilitation Hospital Unit of the Mass. Eye and Ear Balance and Vestibular Center
  - Mass. Eye and Ear specialists provide comprehensive vestibular diagnostic services, and otologic and neurologic assessment and care in a specialty clinic housed at the Braintree Rehabilitation Hospital.

Otolaryngology Resources at Mass. Eye and Ear

- Full spectrum of primary and subspecialty otolaryngology care.
- Highly skilled clinical teams staff each area.
- Emergency Department open 24/7 for otolaryngology emergencies.
- Audiology Department providing a full range of diagnostic and treatment services, including newborn infant screening, audiometry, evoked response testing, electrocochleography and electroneuronography, hearing aid services, and cochlear implant and auditory rehabilitation services for adults and children.
- The Laryngology Division cares for patients suffering from laryngeal cancer, laryngeal motion disorders, hoarseness, papillomatosis and keratosis, and airway and voice disorders. They work closely with speech language pathologists in the

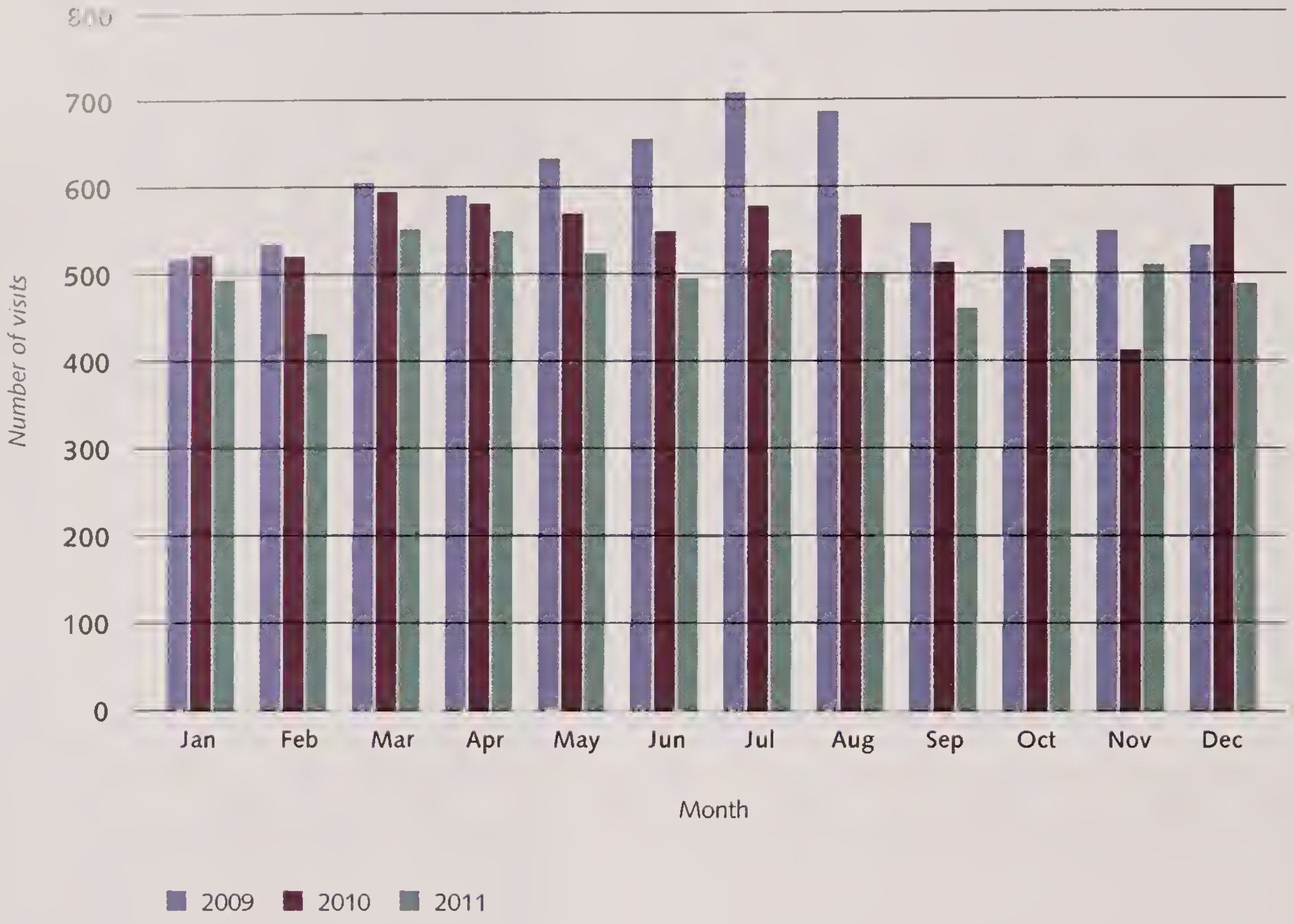
Academic Affiliations

- Massachusetts General Hospital
- Brigham and Women's Hospital
- Beth Israel Deaconess Medical Center
- Boston Children's Hospital

Mass. Eye and Ear Voice and Speech Laboratory, which provides state-of-the-art audio and video diagnostic facilities, technicians, and therapists.

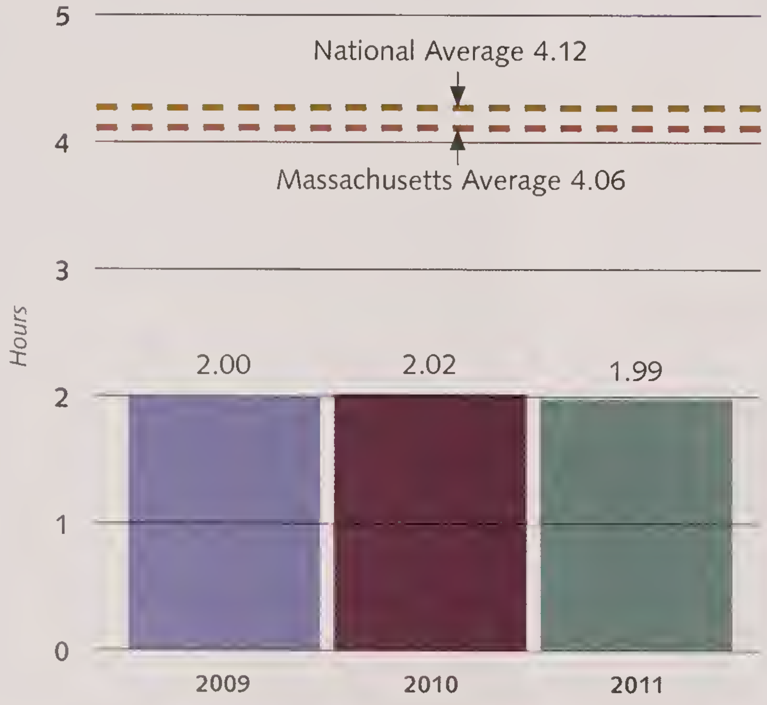
- Mohs Cutaneous Surgery Unit and Carolyn and Peter Lynch Center for Laser and Reconstructive Surgery provide care for a wide array of dermatologic disorders and cancer.
- Jenks Vestibular Diagnostic Laboratory offers the latest equipment and highly trained staff to aid in diagnosis of vestibular and balance disorders.
- Head and Neck Cancer Center provides the most up-to-date and effective evaluation and treatment modalities for patients with head and neck cancer, including microvascular surgery, and collaboration with MGH radiation oncology and proton beam facilities.
- Thyroid and Parathyroid Surgical Division offers diagnostic and surgical care for patients with endocrine diseases of the head and neck, with world-renowned expertise in nerve preservation and electrophysiological intraoperative monitoring in thyroid/parathyroid surgery.
- Facial Nerve Center offers full diagnostic, surgical, and rehabilitative services for patients with facial paralysis and movement disorders.
- Sinus Center provides clinical care to patients with all diseases of the nose and sinuses.
- Pediatric Airway, Voice and Swallowing Center performs assessments and treats a wide spectrum of congenital, developmental, and acquired disorders in children.
- Sleep Center provides polysomnography sleep diagnostic studies for assessment of adults and children with sleep disturbances.
- Clinical Vestibular and Balance Center offers full service multidisciplinary evaluation and treatment of patients with dizziness, vestibular and balance disorders.
- Fully integrated access to all hospital support services and infrastructure, including Social Work and Discharge Planning, Howe Library, Clinical and Research IT, Medical Unit, Infectious Disease Unit, Radiology Unit, Child Life specialists, Surgical Pathology Unit, International Program and language translation support, Dietary, and Pharmacy.

Emergency Department: Otolaryngology Emergency Visits



This bar graph shows the number of otolaryngology patients seen monthly in the Mass. Eye and Ear Emergency Department during the 2009, 2010 and 2011 calendar years. During this three-year period, the Emergency Department maintained a high volume of otolaryngology emergency visits, with an average of 591 patients per month in 2009, 542 in 2010, and 502 in 2011.

Emergency Department: Otolaryngology Visit Times

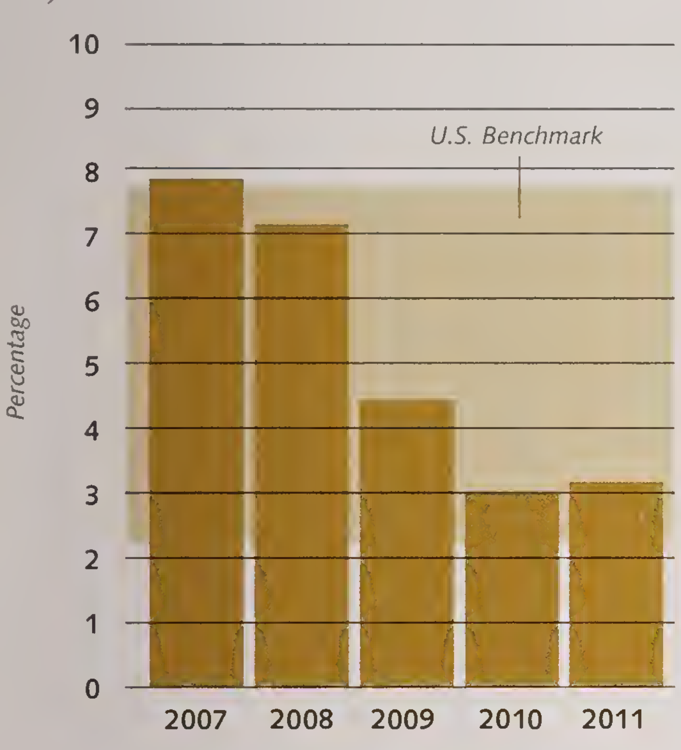


The average otolaryngology visit time in the Mass. Eye and Ear Emergency Department for 2011 was 1.99 hours. The 2011 average visit time was similar to 2009 and 2010 visit times, which were 2.00 and 2.02 hours, respectively. The average visit time is defined as the total time from when a patient walked in the door at the Mass. Eye and Ear Emergency Department to when the patient walked out the door after having seen the otolaryngologist. According to the 2010 Press Ganey Emergency Department Pulse Report, patients in the United States spent an average of four hours and seven minutes (4.12 hours) in the Emergency Department. The Massachusetts state average visit time was 4.06 hours.

For the past three years, the average otolaryngology visit time in the Mass. Eye and Ear Emergency Department was half the average national and state visit times.

The Pediatric Otolaryngology Division is dedicated to delivering specialized, compassionate care in the treatment of pediatric patients suffering from ear, nose, and throat conditions. These conditions vary from routine to complex, including ear and sinus infections, obstructive or infectious problems of the tonsils and adenoid, malformations or tumors of the head and neck, hearing and language disorders, and breathing and voice problems.

Pediatric Otolaryngology: Tonsillectomy with or without Adenoidectomy Returned for Evaluation of Possible Post-Operative Bleeding

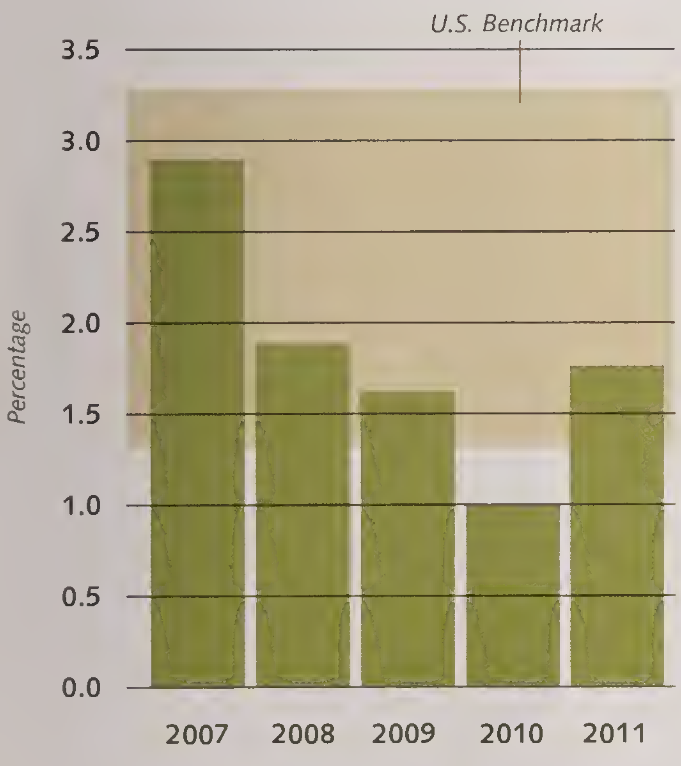


In 2011, full-time surgeons in the Division performed 495 tonsillectomies with or without adenoidectomy. Of those patients, 3.2 percent returned to the Mass. Eye and Ear Infirmary Otolaryngology Emergency Department for evaluation for possible post-operative bleeding, and 1.8 percent of patients were taken back to the operating room for additional repair.

These percentages for the graph to the left represent children undergoing tonsillectomy or tonsillectomy and adenoidectomy who then needed to return to the Emergency Department for evaluation for possible post-operative bleeding.

Post-operative bleeding after tonsillectomy or tonsillectomy and adenoidectomy is a common complication of this surgery. Anytime a parent suspects post-operative bleeding, they are encouraged to return their child to the ED for evaluation. Mass. Eye and Ear reports a rate of return to the ED for possible bleeding that is well below the national average.

Pediatric Otolaryngology: Tonsillectomy with or without Adenoidectomy Returned and Admitted for Post-Operative Bleeding



These percentages for the graph to the left represent children undergoing tonsillectomy or tonsillectomy and adenoidectomy who then developed tonsil bleeding severe enough to require a return to the operating room for surgical treatment.

Reference: Collected by Christopher J. Hartnick, M.D., and clinical staff, 2011-2012. (unpublished)

Mass. Eye and Ear reports a rate of returns to the operating room for surgical intervention of post-operative bleeding after surgery that is better than the national average.

Pediatric Otolaryngology:
Laryngeal Cleft

Between 2005 and 2012, over one thousand patients were seen for pulmonary aspiration, a condition in which a miscommunication between the gastrointestinal tract and the voice box causes food or liquid to become trapped in the lungs, sometimes leading to pneumonia. Of these patients, 42 were diagnosed with type 1 laryngeal cleft, a defect at the very top of the child's airway.

Table 1 shows that 15 of those patients were managed conservatively, by thickening their food so that it stays in the gastrointestinal tract, while 27 of those patients underwent endoscopic repair of their cleft. Table 2 shows that 21 of those patients who underwent surgery achieved successful outcomes for the repaired cleft. We found that the reason the six remaining patients' surgeries were unsuccessful was because of major co-morbidities that precluded success through surgical repair.

Table 1
Laryngeal Cleft Treatment

Total patients diagnosed with type 1 laryngeal cleft	42
Patients conservatively managed by thickening food and drink	15
Patients who underwent endoscopic repair of the cleft	27

Table 2
Laryngeal Cleft Surgical Outcomes

Total patients who underwent surgery for type 1 laryngeal cleft	27
Patients whose surgery was successful	21
Patients whose surgery was unsuccessful due to co-morbidities	6

Reference: Collected by Christopher J. Hartnick, M.D., and clinical staff, 2011-2012. (unpublished)

Pulmonary aspiration is a condition in which either saliva or liquid or solid food contents inadvertently go down the air pipe, instead of the food pipe. This can happen for several reasons, including drinking or eating too quickly, or having poor neuromuscular tone. It is very important to be sure that children do not have an actual connection between their airway and gastrointestinal tract. This connection is usually because of laryngeal cleft. Laryngeal clefts often require surgical repair, to avoid recurrent pneumonia or the development of chronic lung disease.

Hearing the World from All Directions

Elle, bilateral cochlear implant patient

Elle had just come into this world when she failed a routine newborn hearing screening. Her parents learned that she had profound hearing loss after she underwent extensive testing at Mass. Eye and Ear. Dr. Daniel Lee and the Audiology team sprang into action immediately to develop a plan to help Elle hear. Her parents and the team decided that bilateral cochlear implants were Elle's best option. Elle's surgery went well and her implants were activated two days before she turned one.

"Because of having her implanted so young, she has already caught up and is age appropriate with her language – actually, she's ahead of her typical hearing peers," Elle's mom says. "It's really funny because everyone says 'What, she has cochlear implants? She talks so much!' She's a confident and happy little girl."

Otology:
Cochlear Implant Outcomes

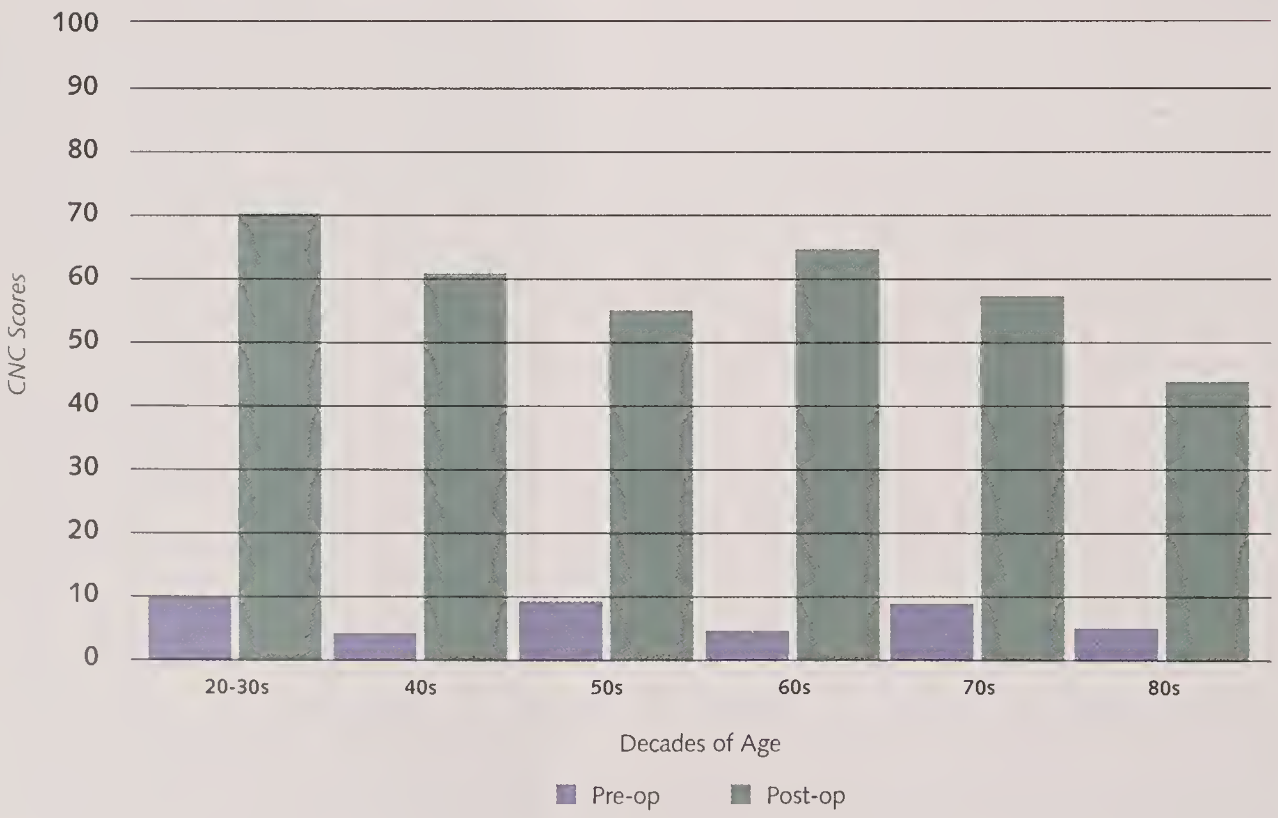
We reviewed the outcomes from adults who underwent cochlear implant (CI) surgery at the Mass. Eye and Ear between 2005 and 2010. All implant recipients included in this analysis initially presented with post-lingual hearing loss and received post-implant speech perception testing more than five months after surgery. Single syllable word testing (consonant-nucleus-consonant or CNC test) is used before and after CI surgery to assess word intelligibility. Our data demonstrates improvement following implantation in adults of all ages with severe-to-profound acquired deafness. There were no permanent facial nerve injuries or cases of meningitis associated with cochlear implant surgery performed by full-time faculty at the Mass. Eye and Ear.

	N	%
Delayed facial nerve paresis (resolved)	2/113	1.7
Permanent facial nerve injury	0/113	0

Roberts, D.S., Lin, H.W., Herrmann B.S., and Lee D.J. Differential cochlear implant outcomes in older adults. Triological Society Meeting, COSM 2012.

After surgery, cochlear implant patients report the following benefits: 1) improved oral communication at home and at work, 2) improved telephone use in the majority of patients, and 3) an overall improved quality of life.

Otology:
Cochlear Implant Outcomes



Roberts, D.S., Lin, H.W., Herrmann B.S., and Lee D.J. Differential cochlear implant outcomes in older adults. Triological Society Meeting, COSM 2012.

The consonant-nucleus-consonant (CNC) test is used before and after implantation to assess word intelligibility. During a CNC test, an audiologist measures the patient's ability to recognize a series of three-letter words such as "hat" and "car." The higher post-op scores shown in the graph to the left represent an improved speech perception in cochlear implant patients at Mass. Eye and Ear after surgery.

Otology:
Stapedectomy Outcomes

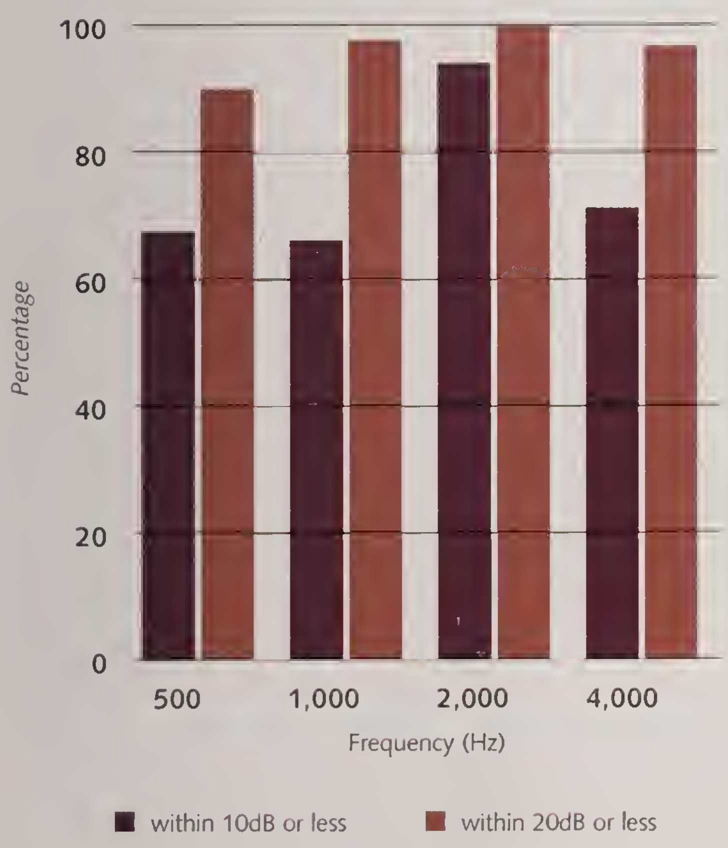
There are three ossicles (hearing bones) in the middle ear that vibrate in response to sound. In patients who suffer from otosclerosis, an abnormal, microscopic growth of bone in the walls of the inner ear causes the third ossicle, called the stapes (or "stirrup") to be fixed or frozen in place. Normally, the stapes moves freely to allow the transmission of sound into the inner ear, but in otosclerosis the stapes cannot vibrate, resulting in hearing loss. These patients will often report difficulty with conversational speech at normal speaking levels while speaking to family or friends that becomes worse in social settings.

Stapedectomy surgery involves the removal of the diseased stapes bone using a specialized laser and replacement with an implant to restore hearing. Outcomes are measured by comparing the "air-bone gap" seen on hearing testing before and after surgery. The air-bone gap is the difference between nerve sensitivity (hearing potential) and what the patient actually hears. In patients with otosclerosis, sound vibrations are blocked by the immobile stapes bone, resulting in a large air-bone gap. The goal of surgery is to improve sound conduction for the patient, closing the air-bone gap. The better the reconstruction, the smaller the air-bone gap seen after surgery.

Stapedectomy is a surgical intervention for patients who suffer from otosclerosis, with the goal of closing the air-bone gap, to improve the ear's conduction of sound.

Closure of Pre-operative Air-Bone Gap

Figure 1 shows the percentages of those 79 patients with closure of the pre-operative air-bone gap to within 10dB or less and to within 20dB or less.



A patient with hearing thresholds of better than 20 decibels (dB) will report significant improvements in communication. In 2011, 79 patients underwent primary stapedectomy surgery. Of those 79 patients, 99% showed closure of the pre-operative air-bone gap to within 20dB or better.

Reference: Collected by Daniel J. Lee, M.D., F.A.C.S., and clinical staff, 2011-2012. (unpublished)

Every patient showed hearing improvement and there were no dead ears following primary stapedectomy surgery.

General Otolaryngology: Sinusitis Outcomes Study

Sinusitis is the symptomatic inflammation of the paranasal sinuses, and since it almost always involves the lining of the nose as well, it is frequently referred to as rhinosinusitis. Most commonly, rhinosinusitis is caused by an upper respiratory viral infection that leads to symptomatic blockage of the normal drainage pathway of the nose and sinuses. While simple viral infections frequently resolve on their own without intervention, sometimes a secondary bacterial infection occurs which may require treatment with antibiotics. An important new study of sinusitis outcomes is being conducted at Mass. Eye and Ear by Drs. Ralph Metson, Stacey Gray, Eric Holbrook and Aaron Remenschneider.

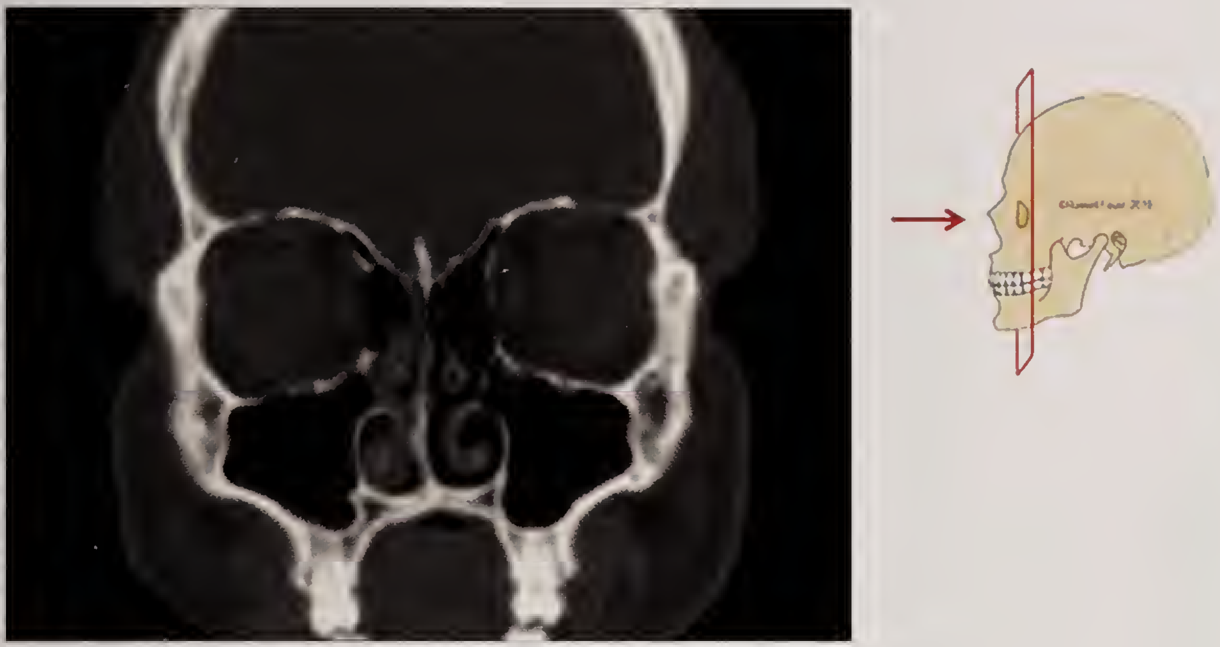
Patients who suffer from sinusitis typically complain of nasal obstruction, facial pain, decreased sense of smell and thick nasal discharge. Treatment consists of nasal decongestion, saline nasal irrigation and often a course of antibiotics. Treatment for chronic rhinosinusitis includes topical nasal therapy, oral medications as needed and sometimes, surgery.

When symptoms are persistent or a complication of sinusitis is suspected, a CT scan is often required to evaluate a patient's sinonasal anatomy. Inflammation that blocks the normal drainage tracts in the nose may require surgical intervention to create a more effective drainage pathway. A normal CT scan will show air filled sinuses and patent sinus openings (Figure 1).

Common symptoms of sinusitis:

- **nasal obstruction**
- **facial pain**
- **decreased sense of smell**
- **thick nasal discharge**

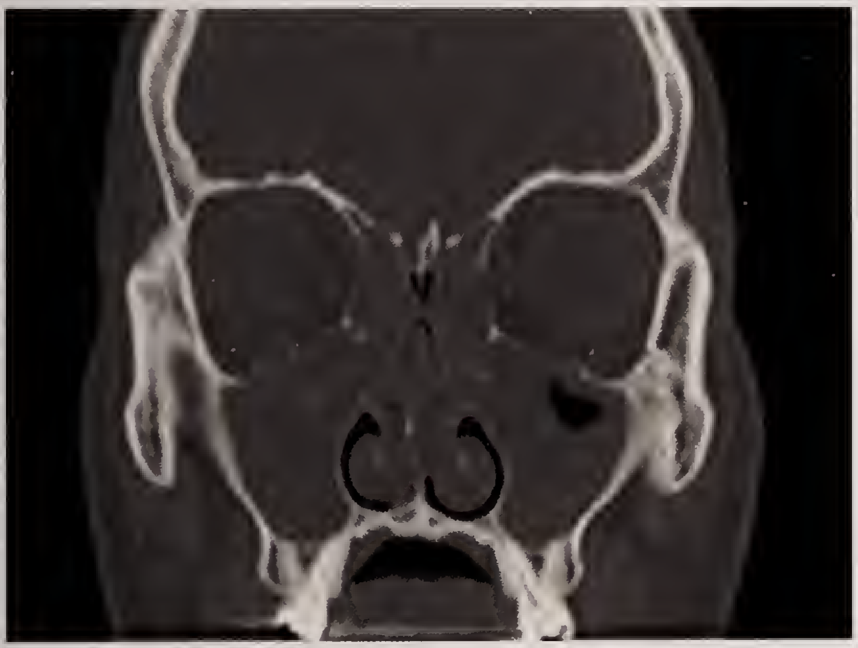
Figure 1. Normal Sinuses as seen on Coronal CT Scan



A normal CT scan, shown to the left, shows air filled sinuses and patent sinus openings.

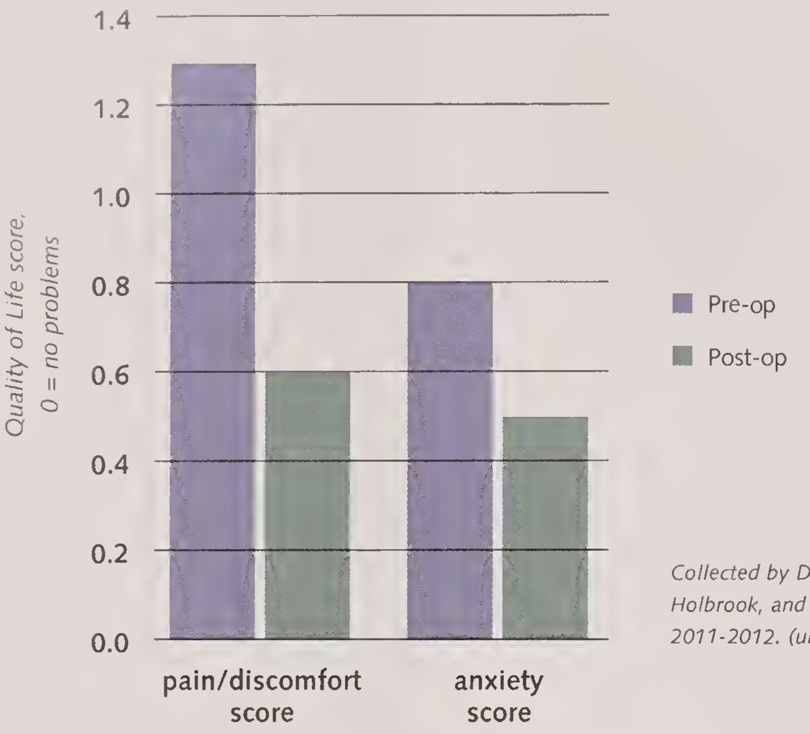
In a patient with chronic sinusitis and obstructed nasal drainage tracts, CT scans are helpful for targeted therapy and preoperative planning, should surgery be necessary (Figure 2).

Figure 2. Sinusitis as seen on Coronal CT Scan



Three month post-operative results show improvements in pain and anxiety scores following sinus surgery (Figure 3).

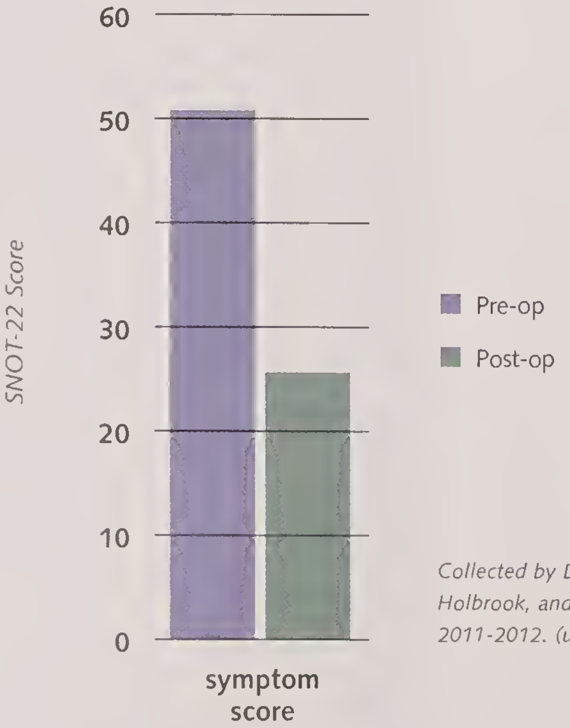
Figure 3.



Collected by Drs. Metson, Gray, Holbrook, and Remenschneider, 2011-2012. (unpublished)

A 22-symptom sinusitis specific questionnaire is used to directly assess patient sinonasal response to operative intervention. At three months, patients report significant improvement in their sinonasal symptoms (this is related as a lower total symptom score) (Figure 4).

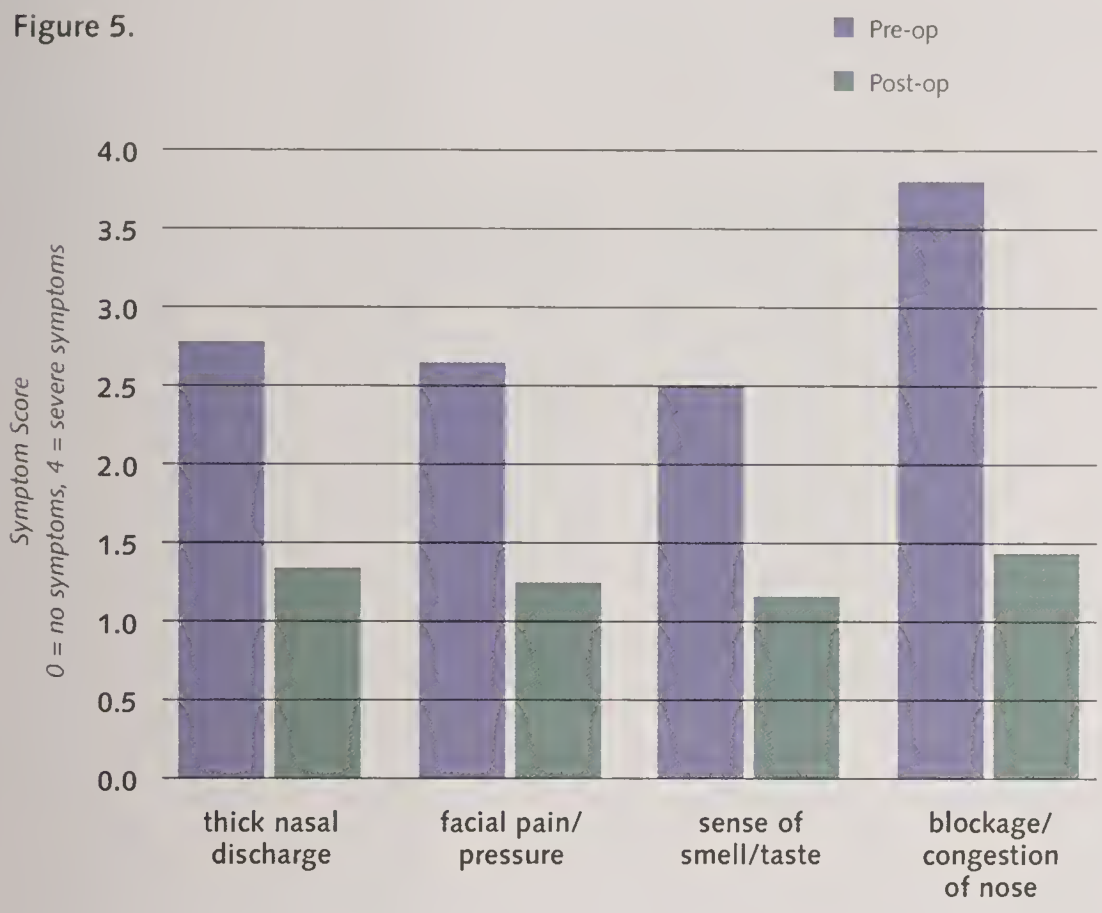
Figure 4.



Collected by Drs. Metson, Gray, Holbrook, and Remenschneider, 2011-2012. (unpublished)

General quality of life scores are assessed using the European Quality of Life 5-Dimension (EQ-5D) test while sinusitis specific symptoms and medication usage are assessed using the Sino-Nasal Outcomes Test (SNOT-22) and the Chronic Sinusitis Survey (CSS). Scores are recorded prior to surgery and at intervals following the operation to methodically chart patient progress over time. We have currently enrolled over 300 patients in just over a year's time, and follow up data is now available for 140 individuals.

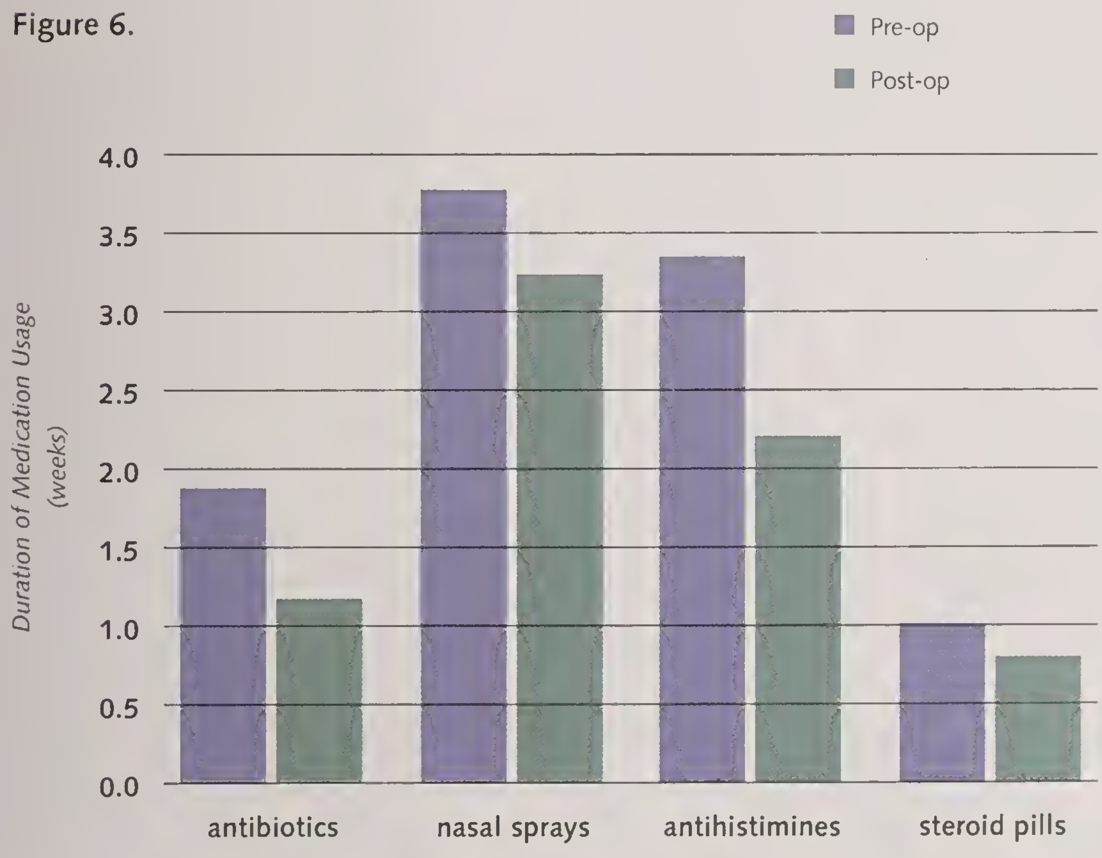
Figure 5.



Collected by Drs. Metson, Gray, Holbrook, and Remenschneider, 2011-2012. (unpublished)

Patients also specifically report improvement in nasal congestion, nasal drainage, facial pain and improved sense of smell (Figure 5).

Figure 6.



Collected by Drs. Metson, Gray, Holbrook, and Remenschneider, 2011-2012. (unpublished)

Medication usage was also found to decline following sinus surgery – for antibiotics, nasal sprays, antihistimines and steroids (Figure 6).

Thyroid/Parathyroid Surgery Outcomes

The Thyroid and Parathyroid Surgical Division is dedicated to the management of thyroid disorders with a special focus on surgical management of thyroid cancer and its recurrence. The incidence of the most common type of thyroid cancer (Papillary Thyroid Carcinoma) has more than doubled in the last several decades in the United States. Approximately 35% of patients with Papillary Thyroid Cancer have metastatic lymph nodes present when they are first treated for their cancer and up to 20% develop lymph node cancer recurrence after initial treatment. The Thyroid and Parathyroid Surgery Division specializes in these patients with cancer recurrence.

Recurrent Thyroid Cancer

When the neck needs to be treated surgically for recurrent cancer, the scar from the first procedure can make the surgery more difficult. This is especially true when recurrent cancerous nodes recur in the paratracheal region, the area where the initial thyroid surgery occurred (Figure 1). Revision thyroid cancer surgery typically increases risks for complications, especially the significant complication of recurrent nerve injury (the nerve that runs through the paratracheal region). The recurrent laryngeal nerve powers the vocal cords, and surgical injury to this nerve can result in loss of voice and/or swallowing problems.

Intraoperative Neural Monitoring during Thyroid Surgery

The Thyroid and Parathyroid Surgical Division utilizes state-of-the art recurrent laryngeal nerve electrophysiologic intraoperative monitoring to optimize management of this nerve during thyroid surgery and to reduce the risk of surgical injury. The Thyroid and Parathyroid Surgical Division has published world standards in the use of this recurrent laryngeal nerve electrophysiologic intraoperative monitoring system.

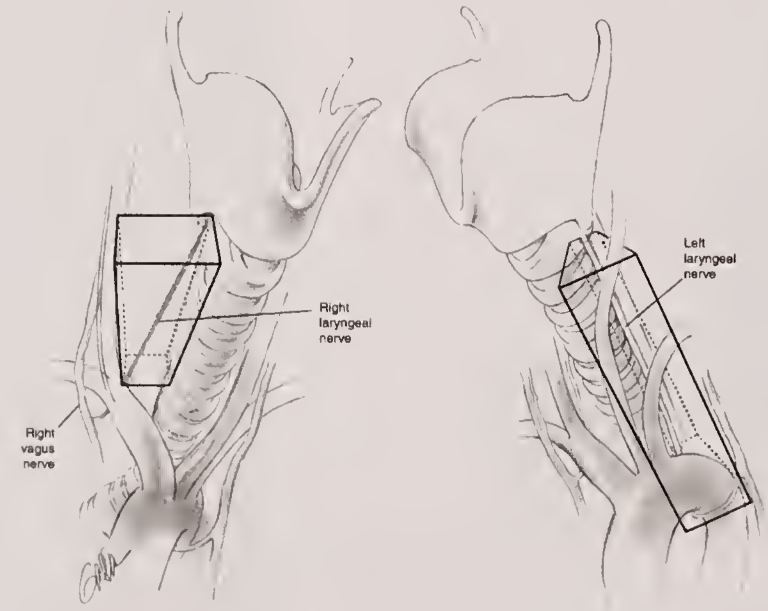


Figure 1. Right and Left Paratracheal Region

The Mass. Eye and Ear Thyroid and Parathyroid Surgical Division performed its 3,000th case in June 2012. This makes the division one of the most experienced neural monitoring units in the world. International monitoring guidelines have been generated using the Division's work as a model.

These areas harbor recurrent thyroid cancer lymph nodes and are the site of the recurrent laryngeal nerves, which power the vocal cords.

Revision Neck Surgery for Recurrent Thyroid Cancer

From 2004 to 2009, 117 patients underwent revision neck surgery at Mass. Eye and Ear for recurrent thyroid cancer with Dr. G. W. Randolph, Director of the Thyroid and Parathyroid Surgical Division. An ultrasound and neck CT was performed on each patient to accurately identify all lymph nodes that required surgery (See Figure 2).

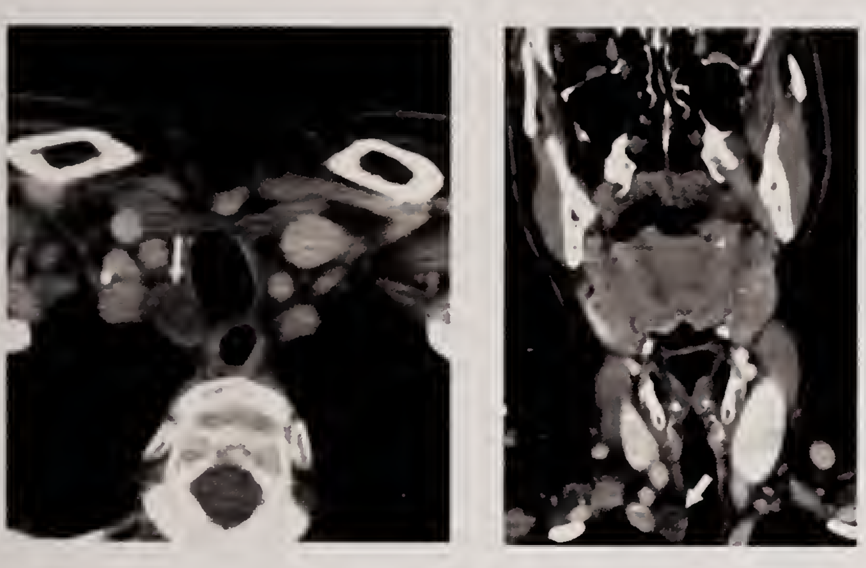


Figure 2. CT Scans showing metastatic neck lymph nodes from recurrent thyroid cancer

In most patients, their revision surgery performed at Mass. Eye and Ear was their first or second revision surgery. However, in some patients their surgery performed at Mass. Eye and Ear was their seventh revision surgery (See Figure 3).

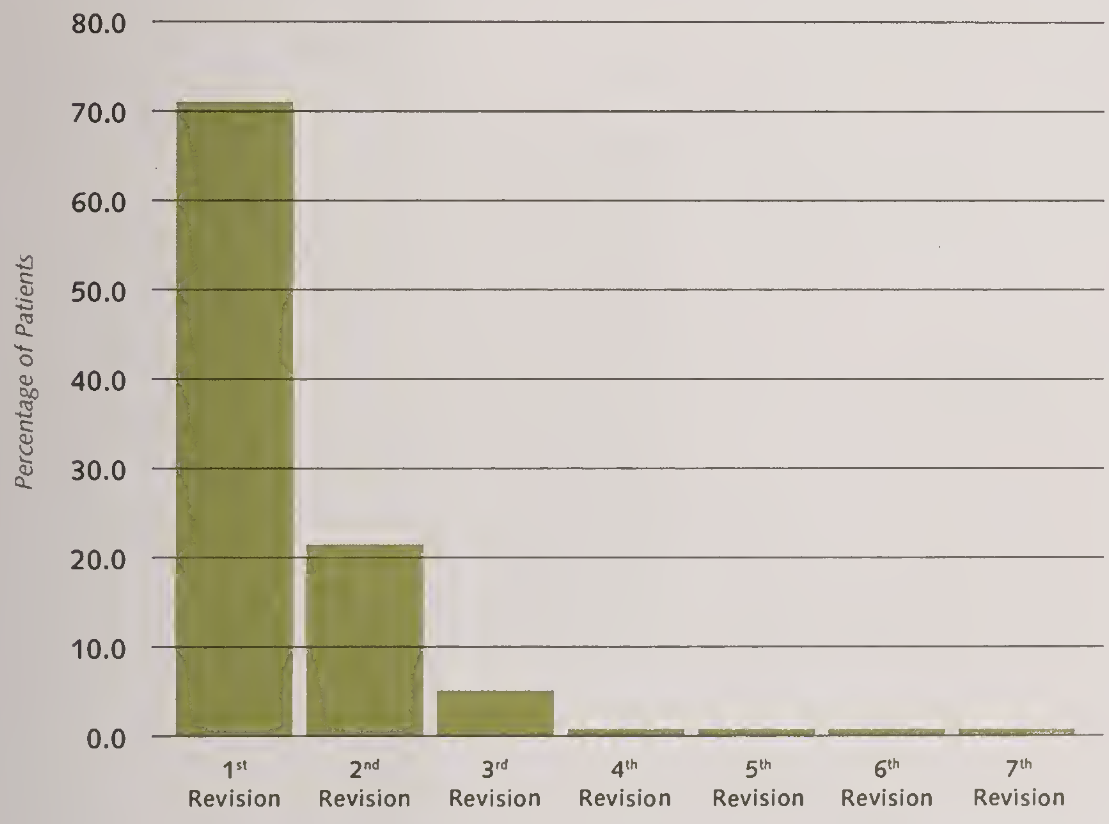


Figure 3. Breakdown of revision surgery by number of revision surgery

Collected by Gregory W. Randolph, M.D., F.A.C.S., and clinical staff, 2004-2009. (unpublished)

In this study, we observed the following outcomes:

- **The average duration of revision surgery was 152 minutes (Range: 65-383).**
- **Average estimated blood loss for revision surgery was 40 mL (Range: 15-100mL).**
- **Rate of Vocal Cord Paralysis (temporary and permanent) occurring as a complication of revision surgery was zero.**

In Figure 2, the white arrow points to a recurrent malignant lymph node. CT scans and ultrasounds are important to map all recurrent thyroid cancer lymph nodes prior to surgery.

In the Thyroid/Parathyroid Surgery Division at Mass. Eye and Ear, most surgeries for recurrent thyroid cancer are revision surgeries, meaning that the patient underwent surgery for thyroid cancer previously. In some patients, up to six prior surgeries were performed before the patient was operated on at Mass. Eye and Ear.

evision Neck Surgery — Recurrent laryngeal nerve injury:

The Thyroid and Parathyroid Surgery Division uses state of the art nerve monitoring equipment to electronically monitor the recurrent laryngeal nerve during surgery. There were no cases of recurrent laryngeal nerve injury, either temporary or permanent, as result of the revision surgery performed at Mass. Eye and Ear. The backdoor approach for recurrent laryngeal nerve and the paratracheal region is utilized in the revision surgeries to avoid scarring from previous surgeries (see Figure 4).

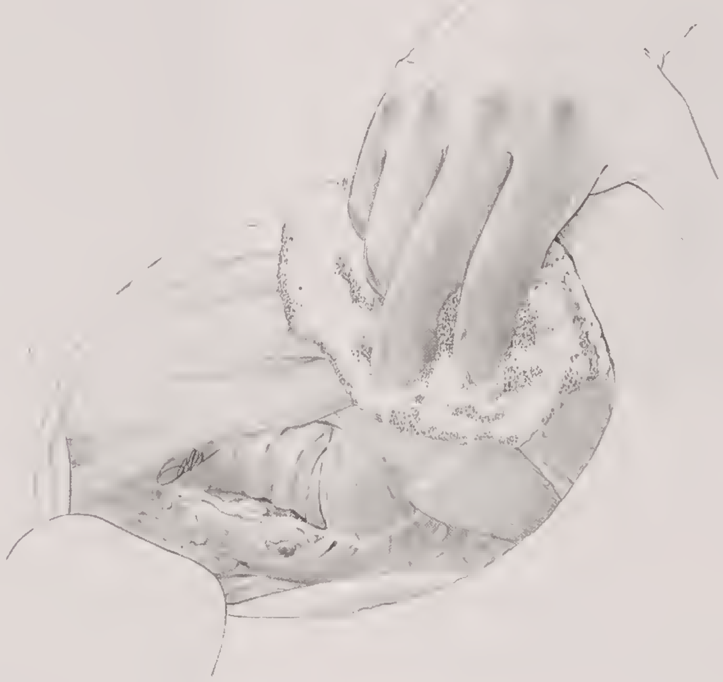


Figure 4. Backdoor approach for revision thyroid surgery

Several types of cancer may recur and require revision neck surgery. The most common type of thyroid cancer requiring revision surgery was papillary thyroid cancer (89.9%) followed by medullary thyroid cancer. Both of these types of thyroid cancer are characterized by high rates of lymph node metastasis. The least common cancer was insular thyroid cancer (0.8%) (See Table 1).

Type of Thyroid Cancer (total = 117)	Number of cases	%
Papillary	105	89.8
Medullary	6	5.1
Insular	1	0.8
Hurthle cell	5	4.3

Table 1: Types of thyroid cancer as seen in our revision cases

Collected by Gregory W. Randolph, M.D., F.A.C.S., and clinical staff, 2004-2009. (unpublished)

Recurrent laryngeal nerve injury can result in 1) loss of voice, 2) swallowing dysfunction, and 3) potential breathing problems and the need for permanent tracheotomy.

None of the patients operated on for recurrent thyroid cancer at Mass. Eye and Ear suffered vocal cord paralysis.

Laryngology:
Injection Laryngoplasty Outcomes

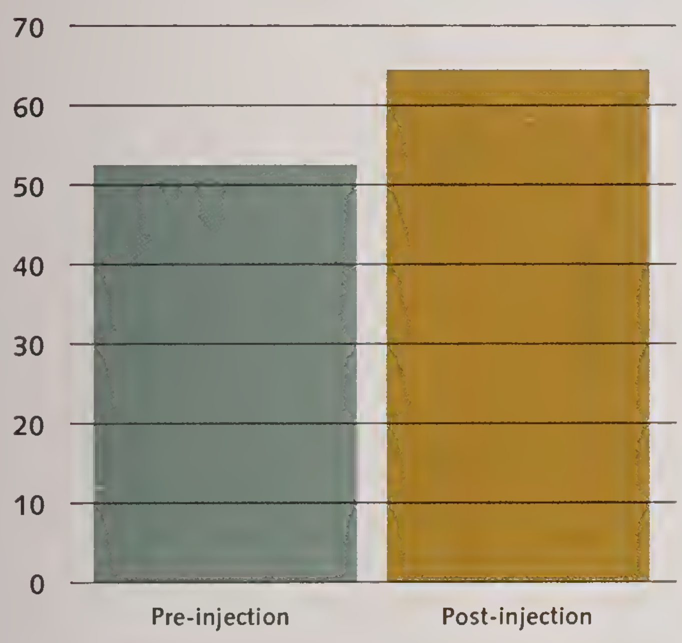
The Laryngology Division treats a variety of disorders of the voice box and upper airway in adults, with a clinical focus on voice preservation, cancer of the larynx, swallowing disorders, and airway reconstruction.

In 2011, the division performed 101 awake, in-office injection laryngoplasty procedures for a variety of causes for glottic insufficiency, including vocal fold scarring (sulcus deformity) or decreased vocal fold motion (paresis or immobility).

The Voice Related Quality of Life (VRQoL) scale is used to measure patient-perceived improvement in the voice and the ability to communicate verbally. The results are not specific to any one symptom (hoarseness, weakness of voice, inability to project, or vocal fatigue), but rather represent overall improvement in quality of life after treatment. The higher the score, the better the result.

Twenty-five patients in 2011 completed both the pre- and post-procedure surveys to contribute to our VRQoL data. The mean pre-procedure score was 52.7 (SD 21.9), while the mean post-procedure score was 64.6 (SD 25.8). There was a statistically significant improvement between the two groups (p = 0.004)

Total VRQoL Scores

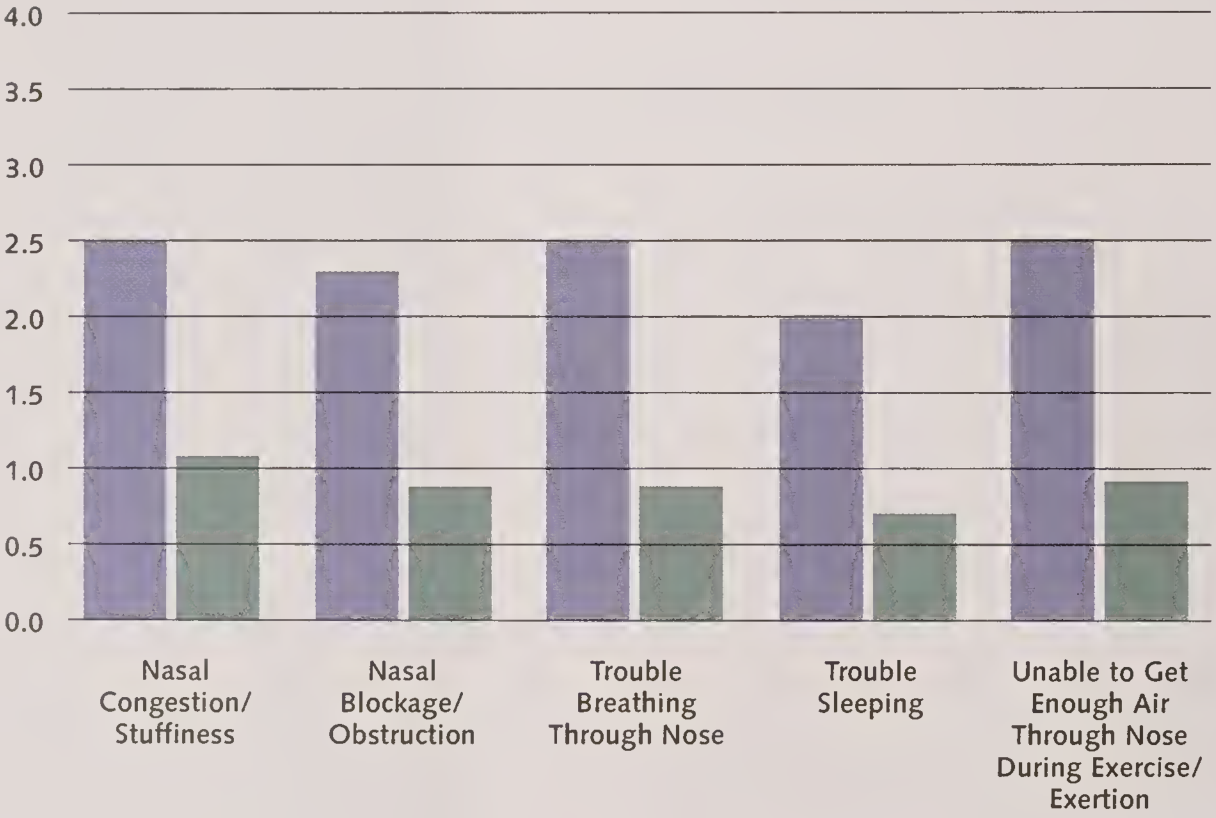


Collected by Ramon A. Franco, Jr., M.D., and clinical staff, 2011-2012. (unpublished)

Facial Plastic and Reconstructive Surgery: Rhinoplasty Outcomes

Patients who present to the Massachusetts Eye and Ear Facial Plastic and Reconstructive Surgery Division with breathing problems sometimes require rhinoplasty, in which the external appearance to the nose is modified in order to correct the breathing problem. Conversely, some patients come requesting changes to their nasal appearance but do not realize that their breathing could be improved as well. Patients with such nasal problems are treated with a global approach to assure that we have optimized their outcomes after surgery.

Sixty-one patients who presented to Dr. DeRosa from 2009-2011 for rhinoplasty (both functional and aesthetic) were asked to report on the impact of their nasal breathing on their quality of life. This was measured using the validated Nasal Obstructive Symptoms Evaluation Scale (NOSE) both before and after surgery. Patients were asked to rate how much of each issue (as seen on the graph below) was a problem for them over the previous month with the following possible answers: 0- not a problem, 1- very mild problem, 2- moderate problem, 3- fairly bad problem, and 4- severe problem.

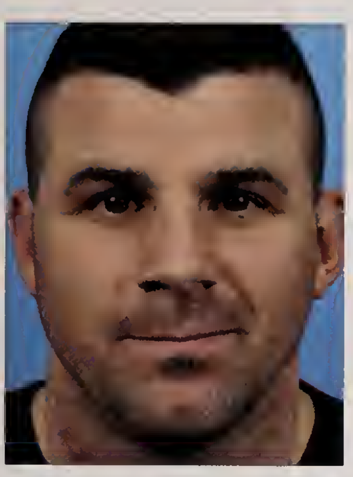


0 = not a problem
1 = very mild problem
2 = moderate problem
3 = fairly bad problem
4 = severe problem

▨ Pre-op
▨ Post-op

Analysis of Outcomes After Functional Rhinoplasty Using a Disease-Specific Quality-of-Life Instrument. Most, SP. Arch Facial Plast Surg 2006; 8: 306-309.

As compared to the preoperative nose-related quality of life, patients undergoing rhinoplasty for both functional and aesthetic reasons reported improvement in each of the measures listed. It is one of our missions to not only improve the appearance of noses but to also achieve improved nasal breathing and overall quality of life for our rhinoplasty patients. We believe that nasal function and appearance go hand-in-hand.



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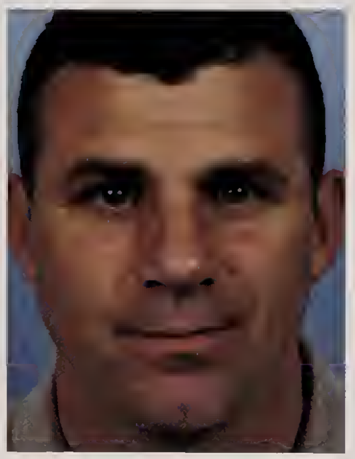

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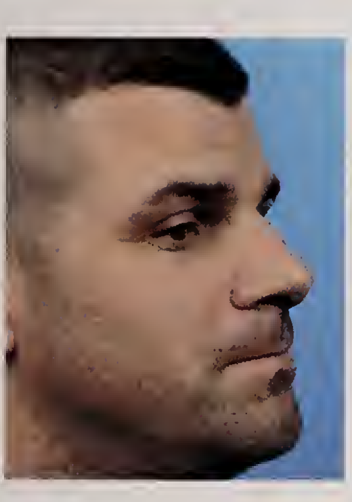

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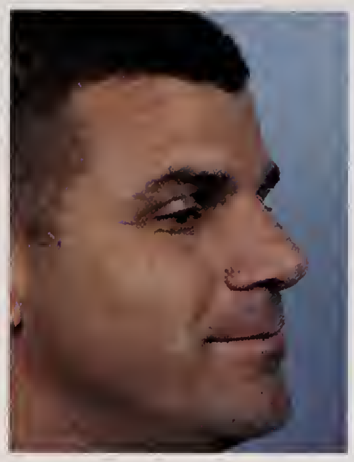

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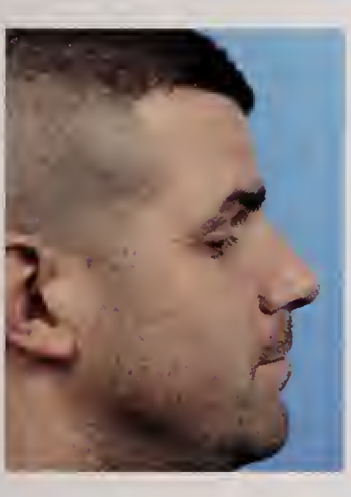

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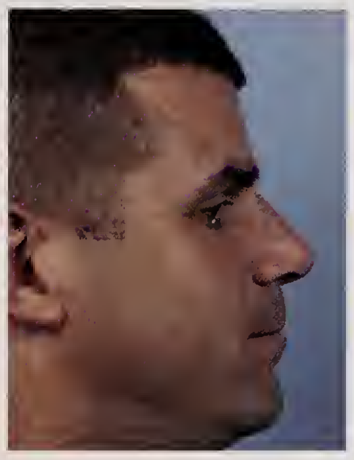

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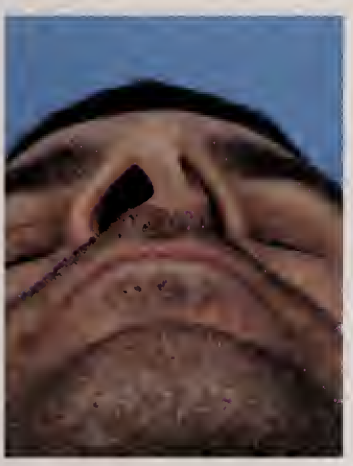

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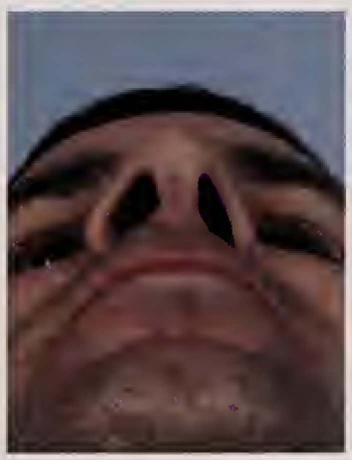


after

This series of pre-operative and post-operative photographs show functional and aesthetic improvements made in a rhinoplasty patient.

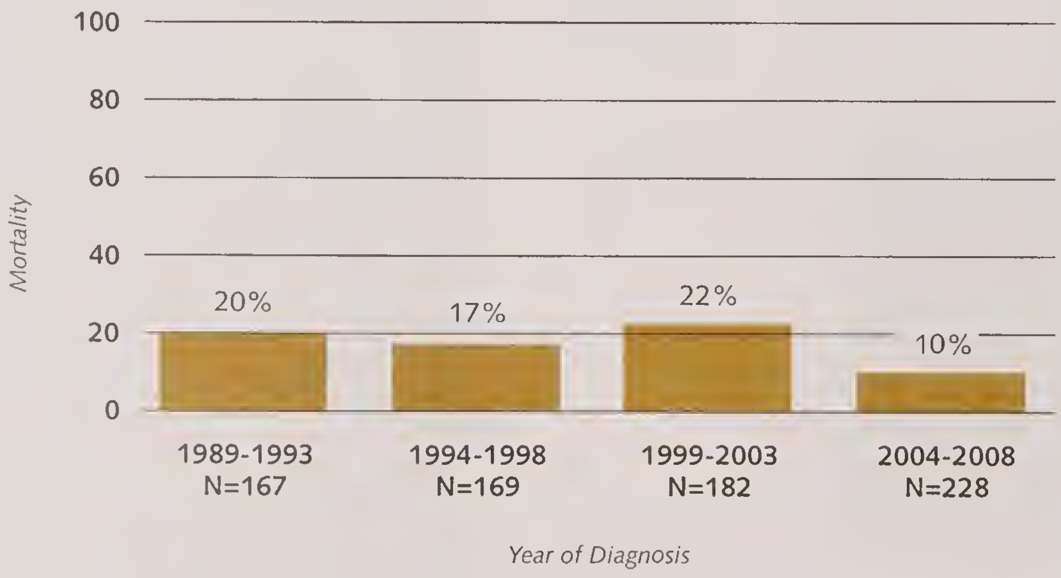
Head and Neck Surgical Oncology: Oropharyngeal Cancer Outcomes

The Head and Neck Surgical Oncology Division at Mass. Eye and Ear in collaboration with the Medical Oncology and Radiation Oncology departments at Massachusetts General Hospital is a leading cancer care center, treating a large volume of head and cancer patients with tumors arising from all sites within the upper aerodigestive tract, salivary glands, and the skin.

In recent years, there has been a nationwide increase in the number of oropharyngeal cancer cases. Figure 2 shows that in the past five years we have seen a 24% increase in the number of oropharyngeal cancer cases. Additionally we have seen a shift in the demographics of this population as seen in Figures 3, 4, and 5. This has led us to increase our research efforts to better understand this disease. It has also led us to carefully consider personalized treatment options tailored for each patient and their cancer.

This increased volume and research efforts has allowed us new opportunities to offer patients all potential treatment options. This includes surgical options such as transoral (robotic and endoscopic) resection as well as open procedures requiring complex reconstructive surgery. Additionally, our collaboration with MGH provides access to the state-of-the-art radiation therapy resources and medical oncology resources including all common practice treatments as well as enrollment in clinical trials.

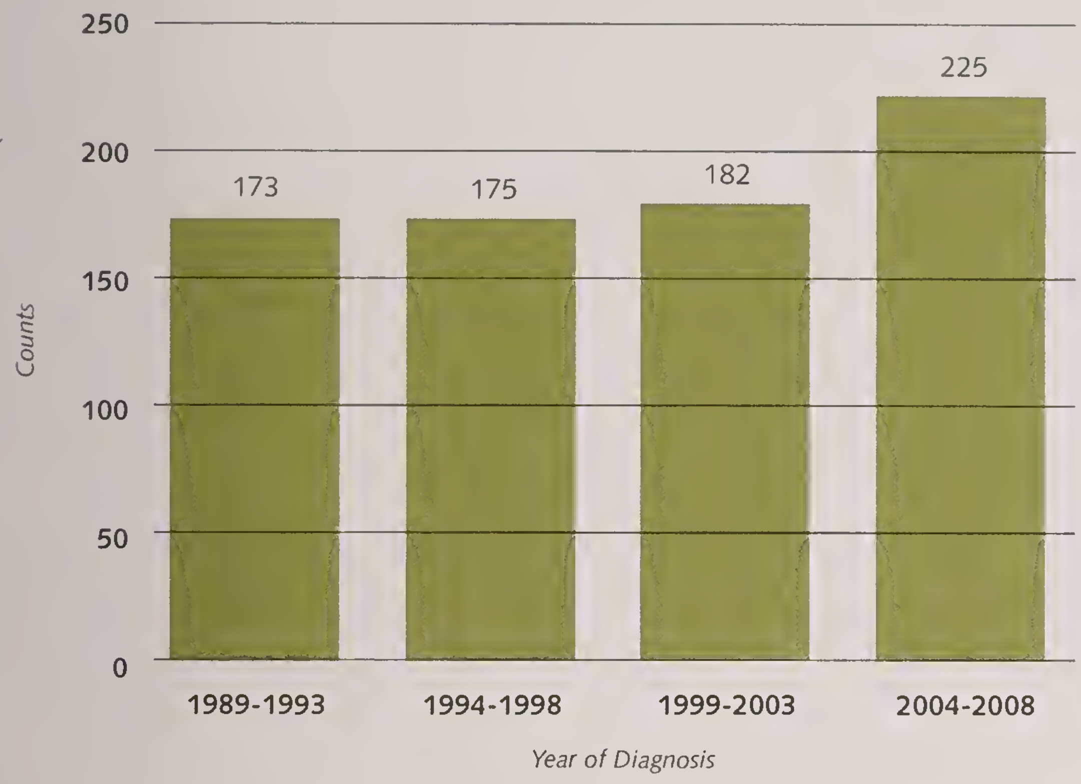
Summary Statistics for Oropharynx Squamous Cell Carcinoma Patients Diagnosed at MGH/Mass. Eye and Ear Between 1989 and 2008
Figure 1. Five-Year Mortality



Through this clinical experience and collaboration with our basic science research labs, we have seen a significant improvement in survival during this time period. Figure 1 shows that five-year survival has increased from 78% to 90%. This represents a substantial improvement.

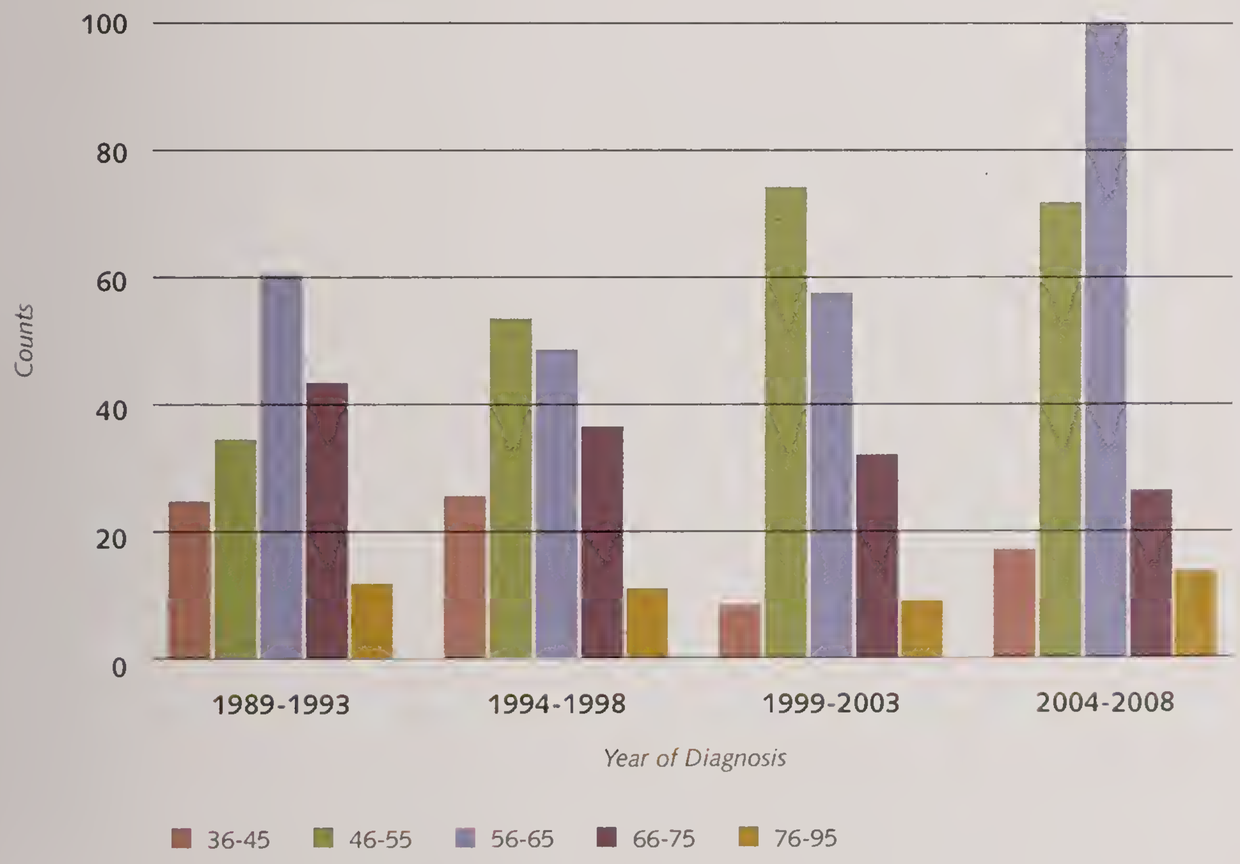
In the future, we will continue to try to further improve the survival, but also focus on improving quality of life after treatment by personalizing treatments, research activities, providing support personnel, and strong relationships with rehabilitative teams such as voice and speech and swallowing disorder specialists.

Figure 2. Number of Patients



Total number of patients = 758

Figure 3. Age at Diagnosis



average age
1989-1992 = 60
1994-1998 = 58
1999-2003 = 58
2004-2008 = 58
all = 58.5

median age
1989-1992 = 60
1994-1998 = 59
1999-2003 = 57
2004-2008 = 57
all = 58

Figure 4. Gender

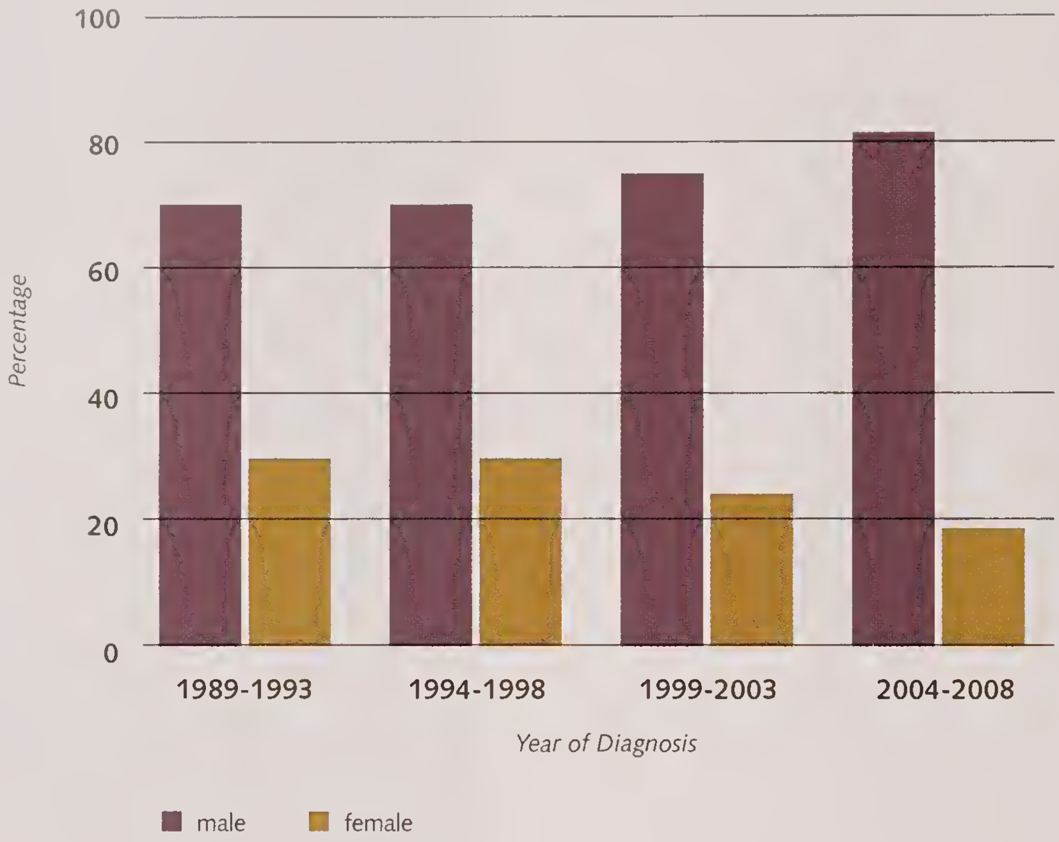
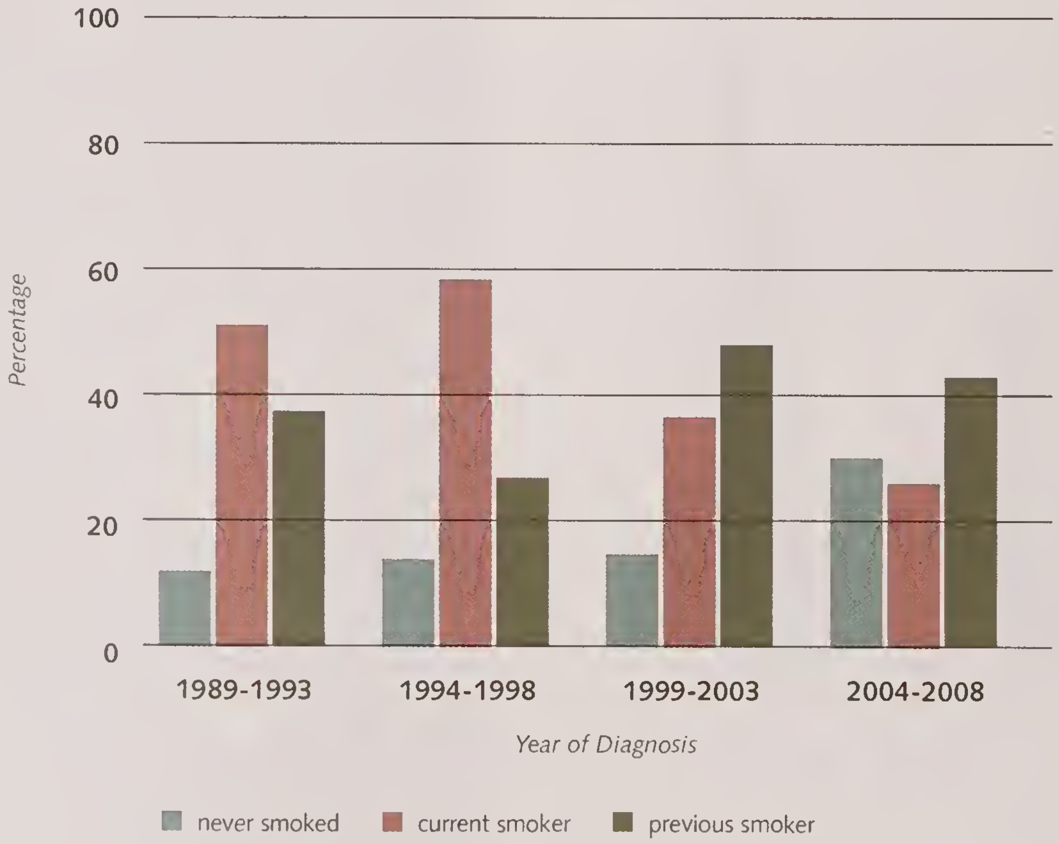


Figure 5. Smoking Status



patient totals:
never smoked = 112
current smoker = 245
previous smoker = 236
total = 593

Massachusetts Eye and Ear Infirmary

RADIOLOGY DEPARTMENT

The Department of Radiology at Mass. Eye and Ear is one of the only radiology departments in the world that is exclusively devoted to the care of patients with disorders of the eyes, ears, nose, throat, head and neck. This central focus brings a specialization that significantly contributes to the successful outcomes of our patients.

In January 2012, the Department of Radiology implemented a new automated CT informatics system for contrast-enhanced imaging that enables evidence-based decision making to improve patient outcomes, create workflow efficiencies and facilitate compliance. Despite wide variances in patients, procedures and staffing, this new system consistently provides the following quality improvement opportunities:

- Personalized contrast-enhanced imaging
- Integrated patient/study information with clinical systems
- Automated record keeping processes
- Improved workflow efficiencies
- Management of risks of contrast media injected intravenously
- Real-time and flexible access to more complete and accurate data, such as extravasation incidents (atypical events), contrast media flow rates and pressure

This quality management tool and application instantly integrates each patient's CT contrast injection record with the associated clinical image sets stored in PACS allowing our radiologists to gain efficiencies in conducting real-time or retrospective image analysis. Data collection for 2012 is underway and will be reported in the next Quality and Outcomes edition.

Radiology Quality Assurance data results from 2011 include the following:

- Critical Test Result Reporting (stat exam results provided within 30 minutes): 85% compliance (radiologist to MD communication)
- Double Read Monitor (re-review of image interpretation by secondary radiologist): 192 exams approved/confirmed and nine referred back to originating radiologist (eight referred for information only and one referred for clinical addendum to report)
- Report Turnaround Time (goal is less than three business days): achieved annual average of 1.97 business days

Massachusetts Eye and Ear Infirmary

NURSING DEPARTMENT

The Department of Nursing at Mass. Eye and Ear is a service-oriented department dedicated to providing safe, effective, patient-centered, timely, efficient, and equitable care to our adult and pediatric patients.

The Department of Nursing believes that the knowledge base of professional nursing is derived from the biological, psychological, physical, and social sciences and that quality nursing care arises from the clinical application of evidence based care.

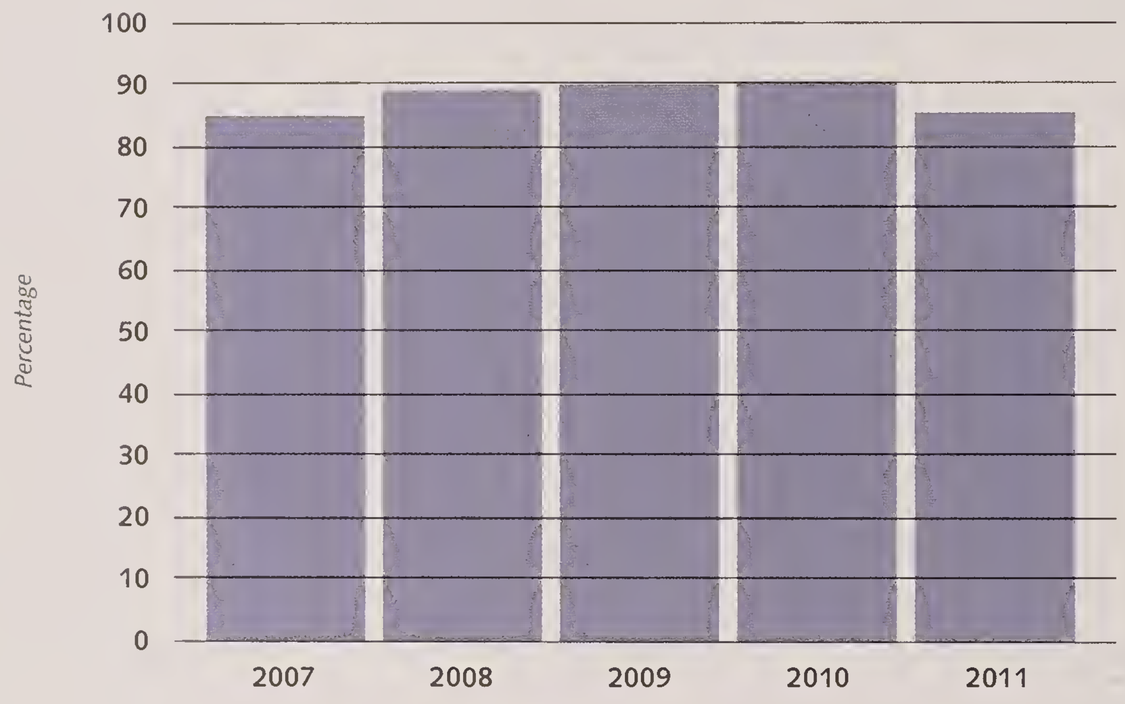
Nursing care is delivered within a framework of care, compassion, and respect for the dignity of the patient and their family or significant other using a patient-centered care model.

During 2011, the Department of Nursing defined quality and outcome measures with the aim of providing quality nursing care to our patients to restore them to their optimal level of health.

The Nursing Work Environment

The Department of Nursing recognizes that a professional work environment supports professional practice and improves patient outcomes. The Department of Nursing conducts an annual nursing work environment survey to assess the professional practice environment of its nursing staff. This voluntary survey, completed by 86% of the registered nurse workforce in 2011, is designed to assess how the nurses feel regarding the quality of care they deliver, and their Nurse-Physician relations.

Nursing Practice Environment Scale (PES) Annual Response Rate

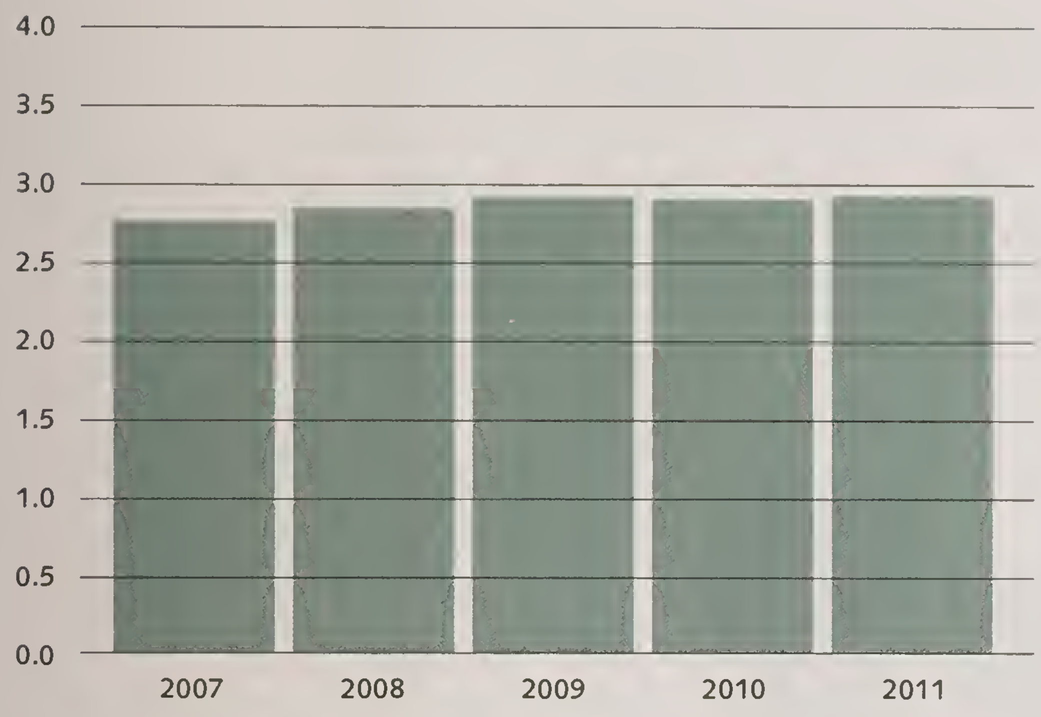


As a member of the National Database of Nursing Quality Indicator (NDNQI®), the Department of Nursing has chosen the RN Survey with Practice Environment Scale (PES) survey tool for this annual assessment of the Nursing Practice Environment.

The PES is endorsed by the National Quality Forums and includes a focus on:

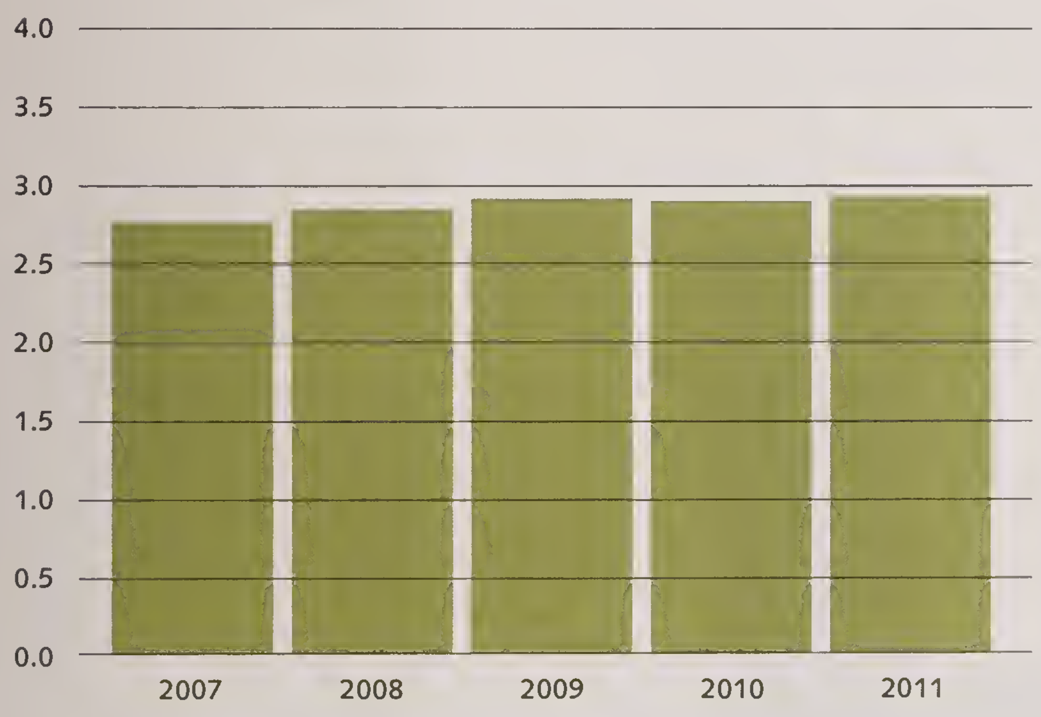
- Nursing Foundation for Quality of Care
- Collegial Nurse-Physician Relations

Nursing Foundation for Quality of Care



Using a 1-4 scale, our nurses assessed the quality of the care they delivered. Elements of this assessment included the high standards of nursing care expected, competence of their peers, and if there is a clearly defined philosophy of nursing.

Collegial Nurse-Physician Relations

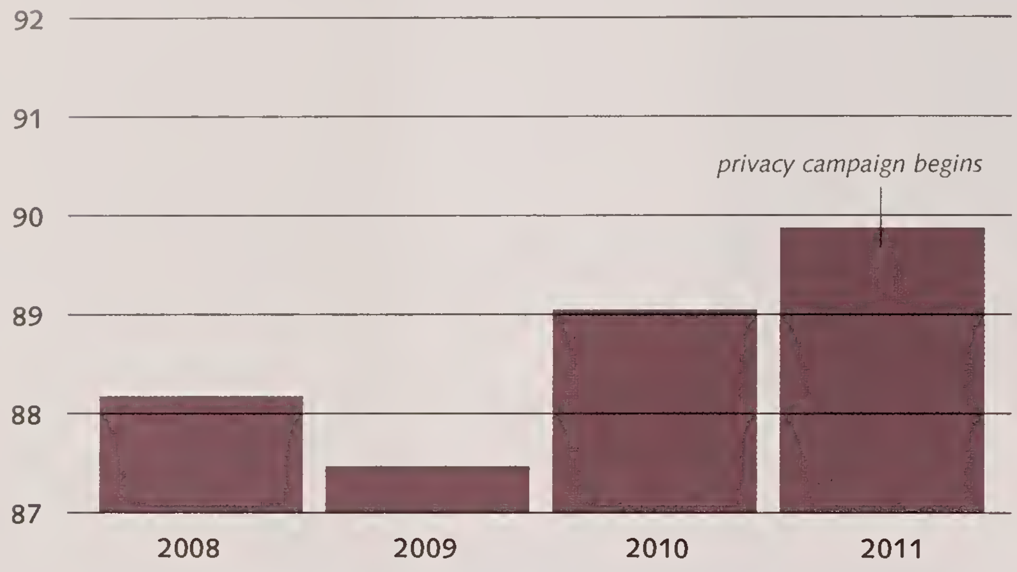


The nurse-physician relations assessment included questions related to team work and collaboration between the disciplines.

The 2011 PES survey results have shown favorable improvements in all PES categories.

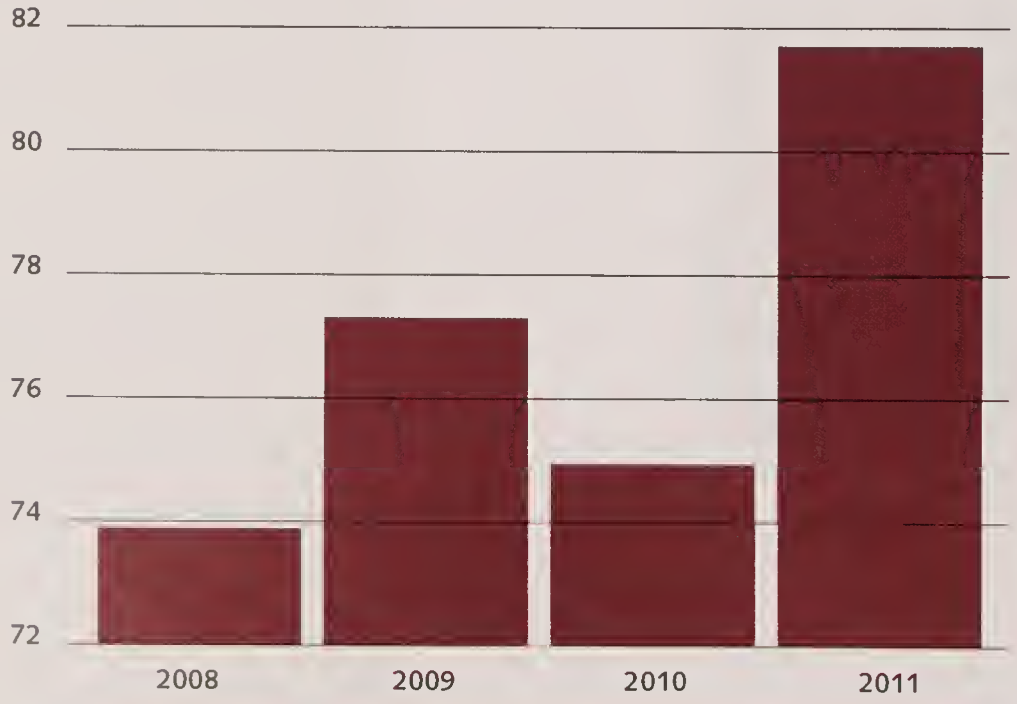
Improving the Patient Experience

During 2011, improving patients' perception of our concern for their privacy was identified as an organizational priority and the Department of Nursing embraced this priority and established it as a quality measure.



The inpatient population at Mass. Eye and Ear represents a group of high acuity, complex patients. These patients are cared for by skilled specialty nurses in a professional collaborative environment.

Hospital Consumer Assessment of Healthcare Providers and Systems (H-CAHPS) Nurses Treat with Courtesy/Respect



The Privacy Campaign was rolled-out and there were a number of improvement opportunities identified by the nursing staff. The Department of Nursing's top priority is to always exceed the patient's an family's expectations and we continue to meet and exceed this goal.

Additionally, we collect patient falls data and healthcare acquired pressure ulcer prevalence at the unit level and the data analysis is favorable for these nurse-sensitive quality measures.

We continue to perfect and enhance our electronic variance reporting and report our falls and pressure ulcer prevalence data externally to ensure transparency.

Ensuring Quality and Patient Safety in the Clinical Practice Areas

Simulation training for Pediatric Emergency Care was identified as a clinical practice quality improvement initiative for 2011. This multidisciplinary experience provides the clinical staff with hands on learning for emergency care as well as team training.

During 2011, there were four simulation events conducted. In a controlled setting, participants worked as a team to improve their performance and strengthen their confidence and skills.

Ophthalmology Full-Time Faculty Listing

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Kenneth Chang, M.D., M.P.H.
Matthew F. Gardiner, M.D.
Scott Greenstein, M.D., F.A.C.S.
Carolyn E. Kloek, M.D.
Zhonghui Katie Luo, M.D., Ph.D.
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Cornea and External Disease

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Deborah P. Langston, M.D., F.A.C.S.
Samir A. Melki, M.D., Ph.D.
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Emergency Ophthalmology and Eye Trauma

Emergency Department: 617-573-3431

Service Director: Matthew F. Gardiner, M.D.

Eye Trauma: 617-573-3022

Service Director: Peter Veldman, M.D.
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617-573-3670

Service Director: Louis R. Pasquale, M.D., F.A.R.V.O.
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Lucy Q. Shen, M.D.
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Neuro-Ophthalmology and Adult Strabismus

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Service Director: Joseph F. Rizzo, III, M.D.
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Ophthalmic Pathology

617-573-3319

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Rebecca Stacy, M.D., Ph.D.
Anat Stemmer-Rachamimov, M.D.

Ophthalmic Plastic Surgery

617-573-5550

Service Director: Suzanne K. Freitag, M.D.
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Optometry/Contact Lens

617-573-3185

Service Director: Jill E. Beyer, O.D.
Andrew Baker, O.D.
Mark Bernardo, O.D.
Kimberly Chan, O.D.
Calliope Galatis, O.D.
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Amy Scally, O.D.
Amy C. Watts, O.D.

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617-573-3185
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Pediatric Ophthalmology and Strabismus

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Refractive Surgery

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Retina

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Retinal Degenerations/ Electroretinography (ERG) Service

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